```
Result
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Post-processing: Listing first 45
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Maximum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Minimum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Word size
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     OM protein -
                                                                                                                                                                                                                                                     Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DB DB
                                                                                                                                                                                                    Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   seq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   length: 0
length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-09-870-406A-33
329
              Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  671580 seqs, 206047115 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       OLIGO Gapop 60.0 , Gapext 60.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              June 24,
                                                                                                                                                                                                              Query
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SPTREMBL_21:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MALSMEFGFSIGSCFKAPNP.....
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GenCore version 5.1.6
Copyright (c) 1993 - 2003 Compugen Ltd.
                                                                                                                                                                                                                                                                                                      sp_unclassified:*
sp_rvirus:*
sp_bacteriap:*
sp_archeap:*
                                                                                                                                                                                                                                                                                                                                                                                                sp_phage:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              sp_bacteria:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         sp_archea:*
                                                                                                                                                                                                                                                                                                                                                                                                           sp_organelle:*
                                                                                                                                                                                                                                                                                                                                                                                                                       sp_mhc:*
                                                                                                                                                                                                                                                                                                                                                                                                                                   sp_mammal:*
                                                                                                                                                                                                                                                                                                                                                                                                                                             sp_invertebrate:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                          sp_human:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  sp_fungi:*
                                                                                                                                                                                                                                                                                                                                                                         sp_rodent:*
                                                                                                                                                                                                                                                                                                                                                             sp_virus:*
                                                                                                                                                                                                                                                                                                                                                                                   sp_plant:*
                                                                                                                                                                                                                                                                                                                                                   sp_vertebrate:*
                                                                                                                                                                                                  Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2003, 18:52:11; Search time 29 Seconds
   786
59
59
88
94
107
109
124
124
                                                                                                                                                                                                    DB
   222615
                                                                         11
2
                                                                                                        10
                                               Q8RZB6
Q97UH0
Q9FZC2
Q8RDB0
Q9C7E7
Q9YGA3
Q9YGA3
Q9CUY3
Q9RQH4
Q77822
P94122
                                                                                                                                                                                                  ij
              Q9AFZ5
Q8VSP8
                                      Q9N0W5
                                                                                                                                                               Q9SR43
Q9SS72
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            summaries
                                                                                                                                                                                                                                   SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (without alignments)
2337.569 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SIIGKSYETRPWDLTGQFIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     671580
Obc7e7 arabidopsis
Obcyg3 methanosarc
Obcyg3 methanosarc
Obcyg4 nus musculu
Obcyg4 listeria mo
O77822 human immun
P94122 acidlanus a
OpnOw5 oryctolagus
Opaf25 shigella fl
O8vsp8 shigella fl
O8vsp8 shigella fl
                                                                                                                            O9sr43 arabidopsis
O9ss72 arabidopsis
O8rzb6 oryza sativ
O97uh0 sulfolobus
O9fzc2 arabidopsis
                                                                                                                                                                                                  Description
                                                                                                                  Q8rdb0
                                                                                                                  thermoanaer
```

7 2.1			7 2.1					7 2.1	7 2.1	7 2.1	7 2.1	7 2.1	7 2.1	7 2.1	7 2.1	7 2.1	7 2.1	7 2.1						2.	2.	7 2.1	
			287 16									248 9				218 17					167 2			158 12		136 16	
				6 067855	TAHM80							Q8SBI3							093657	097940	Q8RLY5	_		2 Q91SF2	_		6 P96817
Q9rz04 deinococcus	_	gallus	Q926q5 listeria in	067855 aquifex aeo		069841 streptomyce	Q92n06 rhizobium m	ralstonia			Q9fd15 streptomyce	Q8sbi3 streptococc	Q9cuz0 mus musculu	O41089 paramecium	Q8xnk2 clostridium	Q8ts71 methanosarc	Q8tn69 methanosarc	Q8ttb0 methanosarc	093657 methanosarc	097940 sus scrofa		Ф	~	Q91sf2 trichoplusi	3	2 strep	P96817 mycobacteri

## ALIGNMENTS

```
RESULT 1
Q9SR43
                                                                                                                                                         A LD CONTRACTOR OF THE CONTRAC
Query Match
Best Local S
Matches 329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            O9SR43;

O1-MAY-2000 (TrEMBLrel. 13, Created)

O1-MAY 2001 (TrEMBLrel. 13, Last sequence update)

O1-JUN-2001 (TrEMBLrel. 17, Last annotation update)

F3L24.1 protein (PHYTOCHROMOBILIN synthase HY2 protein).

F3L24.1 OR HY2.
                                                                                                                                                     EMBL; ABO
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Lin X., Kaul S., Town C.D., Benito M., Creasy T.H., Haas B., Ronning C.M., Koo H., Fujii C.Y., Utterback T.R., Barnstead M.E., Bowman C.L., White O., Nierman W.C., Fraser C.M., Barnstead M.E., "Arabidopsis thaliana chromosome III BAC F3124, genomic sequence."; Submitted (NOV-1999) to the EMBL/GenBank/DDBJ databases.
                                                                                                                                                                                                                         "The Arabidopsis HY2 Gene Encodes Phytochromobilin Synthase, Ferredoxin-Dependent Biliverdin Reductase."; Plant Cell 13:425-436(2001).
EMBL; ACO11436; AAF14017.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Arabidopsis thaliana (Mouse-ear cress).
Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosideurosids II; Brassicales; Brassicacee; Arabidopsis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE FROM N.A. STRAIN-CV. COLUMBIA;
                                                                                                                                                                                                                                                                                                                                                                                       Kohchi T., Mukougawa K., Frankenberg N., Masuda Lagarias J.C.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Q9SR43
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NCBI_TaxID=3702;
                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE FROM N.A. MEDLINE=21124703; PubMed=11226195;
    Local Similarity
nes 329; Conserv
                                                                                                                                                     AB045112; BAB33374.1;
NCE 329 AA; 38129 M
100.0%; llarity 100.0%; Conservative 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PRELIMINARY;
                                                                                                                                                     38129 MW;
Score 329; D
Pred. No. 0;
0; Mismatches
                                                                                                                                                     98727CD1778D973C CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ŗ
                                                                        DB 10;
0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        core eudicots; Rosidae;
                                                                                                                                                                                                                                                                                                                                                                                                                           X
                                                                    Length 329;
    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                           Yokota A.,
0;
                                                                                                                                                                                                                                                                                                                                                       ø
Gaps
```

Š

1 MALSMEFGFSIGSCFKAPNPPVLISASPNKINFTLRRRKKRFLLRVSAVSYKEFAESALE

<sup>\_6</sup>0

```
STRAIN-CV. COLUMBIA;
Lin X., Kaul S., Town C.D., Benito M., Creasy T.H., Haas B.,
Ronning C.M., Koo H., Fujii C.Y., Utterback T.R., Barnstead M.E.,
Bowman C.L., White O., Nierman W.C., Fraser C.M.,
Submitted (JAN-2001) to the EMBL/GenBank/DDBJ databases.

EMBL, AC009326; AAD56331.1;
EMBL, AC009326; AAD56331.1;
SEQUENCE 273 AA; 31909 MW; 06E94227646E6E87 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Arabidopsis thalfana (Mouse-ear cress).
Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae;
eurosids II; Brassicales; Brassicaceae; Arabidopsis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      l-MAY-2000 (TremBirel 13, Created)
l-MAY-2000 (TremBirel 13, Last sequence update)
l-DEC-2001 (TremBirel 19, Last annotation update)
                                                                                                                                                                                                                                                                          173 KYAETFPWGGKLTGESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREE 232
                                                                                                                                                                                                                                                                                                                                                113 OVEDEAGEMERESTIPIFCANEFTSTNVNIVVLDLNPLHQLTDQTDXQDKYXNKIMSIXH 172
                                                                                                                                                                                                                                                                                                                          74 QVEDFAGEMEPEYDTPÍFCANFÉTSTNÝNÍVÝLDLNÉLHOLTDOTDÝODKYÝNKÍNSÍYH 133
                                                                                                                                                                                                                MEPSHVRANCEAQHKYLTWRAQK
                                                                                                                                                                                                                                                        KYAETFEWGGKLTGESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREE
                                                                                                                                                                                                                                    MEPSHVRANCEAQHKYLTWRAQK 255
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  301 EDGTVSDKRSIIGKSYETRPWDLTGQFIG 329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            241 NGEAQHKYLTWRAQKDÞGHGLLKRLVGEAKAKELLKDFLFNGVDELGTKTFIDYFPEYQT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            241 NCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLRDFLFNGVDELGTKTFIDYFPEYQT 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  181 GGKLTGESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEWTIQVREEWEPSHYRA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        121 MEPEYDTPIFCANFFTSTNYNIVYLDLNPLHOLTDQTDYQDKYYNKINSIYHKYAETFPW 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          61 ETRKRIVLEPSHLOEKYSSMTGLDGKTELOMLAFKSSKIRLLRSMAIENETMOVFDFAGF 120
                                                                                                                                                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EDGTVSDKRSIIGKSYETRPWDLTGQFIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GGKLTGESIKFFSPLVMWTRESSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRA 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MEPEYDTPI FCANFFTSTNVNI VVLDLNPLHOLTDOTDYODKYYNK IMSIYHKYAETFPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                              43.5%; Score 143; DB 10; 1
100.0%; Pred. No. 1.7e-145; I
                                  Created)
Last sequence update;
Last annotation update;
                                                                                                                            PRT;
                                                                                                                                                                                                                  216
                                                                                                                                                                                                                                                                                                                                                                                                                        Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRT;
                                                                                                                240 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          273
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Å
                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 273;
                                                                                                                                                                                                                                                              193
                                                                                                                                                                                                                                                                                                                                                                                                    0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      60
            RESULT 5
Q9FZC2
ID Q9FZ
AC Q9FZ
                                                                                                                                                                                                                                                        RESULT 4
Q97UHO
AD Q97U
AD Q97U
DT 01-Q0
DT 01-Q0
DT 01-Q0
DT 01-Q0
DT 01-Q0
C Arch
QX NCBI
RN [1]
RP SEQU
RC STRA
RX MEDL
RA Char
RA Heik
RA Thi-
RA Char
RA Garr
RA 
                                                                                                                      B
                                                                                                                                                      Ş
                                                                                                                                                                                                                                        PSERGIN-ATCC 35092 / DSM 1617 / P2;

RC STRAIN-ATCC 35092 / DSM 1617 / P2;

RA MEDLINE-1332296; PubMed-11427726;

RA She Q., Singh R.K., Confalonieri F., Zivanovic Y., Allard G.,

RA Awayez M.J., Chan-Weiher C.C.-Y., Clausen I.G., Curtis B.A.,

RA De Moors A., Erauso G., Fletcher C., Gordon P.M.K., Charledon, R. F., Charledon, R. F., Ragan M.A., Schenk M.E., Theriault C., Tolstrup N.,

RA Charlebois R.L., Doolittle W.F., Duguet M., Gassterland T.,

RA Garrett R.A., Ragan M.A., Sensen C.W., Van der Oost J.,

RT The complete genome of the crenarchaeon Sulfolobus solfataricus

DR EMBL, AB006896; AAX43199.1; -

DR Interpro; IPR004104; GFO_IDH_MOCA.

DR Pfam; PP01408; GEO_IDH_MOCA.C.

PFam; PP01408; GEO_IDH_MOCA.C.

KW Complete proteome. IDH_MOCA.C; 1.
                                                                                                                                                                                      Matches
                                                                                                                                                                                                      Query Match
Best Local (
        Q9FZC2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          QΨ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0970H0;
01-OCT-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NCBI_TaxID=2287;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sulfolobus solfataricus.
Archaea; Crenarchaeota;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      01-OCT-2001 (TremBLrel 18,
01-OCT-2001 (TremBLrel 18,
01-DEC-2001 (TremBLrel 19,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Dehydrogenase, putative.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Q97UH0
                                                                                                                        272 KELLRDFL 279
                                                                                                                318
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          "Oryza Sativa nipponbare(GA3) genomic DNA, chromosome 1, clone:Bl147A04"; Submitted (JUN-2001) to the EMBL/GenBank/DDBJ databases.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Oryza sativa (japonica cultivar-group).
Bukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; Liliopsida; Poales; Poaceae;
Bhrhartoideae; Oryzeae; Oryza.
NCBI_TaxID-39947;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STRAIN-CV.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              B1147A04.9 P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE FROM N.A.
                                                                                                                                                                                Similarity
8; Conserv
                                                                                                      KELLRDFL
                                                                                                                                                                                                          Proteome.
371 AA; 41760 MW; DAAE16466D53306B CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            142 IVVLDLNPL 150
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  109
            PRELIMINARY;
                                                                                                                                                                          2.4%;
ilarity 100.0%;
Conservative (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Similarity
9; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        IVVLDENPL 117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NIPPONBARE;
Matsumoto T.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                      325
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2.7%; bu
/ 100.0%; pr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            86192.1; -.
27459 MW; 7C3433A04E5FE9E2 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Thermoprotei; Sulfolobales; Sulfolobaceae;
                                                                                                                                                                                Score 8; D
                                                                                                                                                                      0,
      PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Last sequence update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score 9; [
b; Pred. No.
                                                                                                                                                              Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PRT;
  491
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Mismatches
                                                                                                                                                                              DB 17;
o. 10;
Å
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        371
                                                                                                                                                                                                                                                                                                                                                        Sulfolobus solfataricus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DB 10;
o. 0.55;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ā
                                                                                                                                                          ç,
                                                                                                                                                                                  Length 371;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          update)
                                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 240;
                                                                                                                                                  0,
                                                                                                                                                                                                                                                                                                                                                                                                                Peng
rup N
                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    0,
                                                                                                                                                                                                                                                                                                                                                                                                                                <u>`</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                        0;
```

MZB10.18 protein.

SEQUENCE FROM N.A

Q9SS72 RESULT 2

Q9SS72

0

밁 Š 밁 γQ DЬ Q

8 δô Б δÃ

181

RESULT 3
Q8RZB6
ID Q8RZ
AC Q8RZ
DT 01-J
DT 01-J
DT 01-J

Db.

194

VΩ 뫄 Qγ B Qy

233

Query Match Best Local Similarity Matches 143; Conserv

```
RESULT 7
Q9C7E7
ID Q9C7
AC Q9C7
DT 01-J
                                                                                                                                                                                                                                                                                                                            RESULT OF THE PROPERTY OF THE 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                     δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δÃ
                                                                                                                                                                                                                                         Query Match
Best Local S
Matches 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
Best Local S
Matches 8
Q9C7E7;
Q9C7E7;
01-JUN-2001
                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE FROM N.A.

STRAIN-MB4T / JCM11007;

MEDLINE-21992816; pubMed-11997336;

Bao Q., Tian Y., Li W., Xu Z., Xuan Z., Hu S.,
Chen Y., Xue Y., Xu Y., Lai X., Huang L., Dong
Tan H., Chen R., Wang J., Yu J., Yang H.;

"A complete sequence of T. tengcongensis genome
Genome Res. 12:689-700(2002).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Q8RDBO;
01-JUN-2002 (TrEMBLrel.
01-JUN-2002 (TrEMBLrel.
01-JUN-2002 (TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sakano H., Liu S.X., Yu G., Lee J.M., Lenz C., Pham P., Toriumi M., Chil C., Chlou J., Chol E., Chung M., Gonzalez A., Howng B., Liu A. Vaysberg M., Altafi H., Brooks S., Buehler E., Chao Q., Conn L., A. Conway A.B., Hansen N.F., Johnson-Hopson C., Khan S., Kim C., Lam B Miranda M., Nguyen M., Palm C.J., Shinn P., Southwick A., Davis R.W Ecker J.R., Federspiel N.A., Theologis A.;
"The sequence of BAC TIK7 from Arabidopsis thaliana chromosome 1.", Submitted (AUG-2000) to the EMBL/GenBank/DDBJ databases.
EMBL; AC013427; AAF98579.1; "147A6584A8496A27 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Arabidopsis thaliana (Mouse-ear cress).

Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae;
eurosids II; Brassicales; Brassicaceae; Arabidopsis.
                                                                                                                                                                                                                                                                                                                                 SEQUENCE
                                                                                                                                                                                                                                                                                                                                                 Complete
                                                                                                                                                                                                                                                                                                                                                                       EMBL; AE012986; AAM23435.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Thermoanaerobacter tengcongensis.
Bacteria; Firmicutes; Bacillus/Clostridium group; Clostridia;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Hydrogenase maturation factor. HYPF OR TTE0131.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Q8RDB0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 STRAIN=CV. COLUMBIA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 T1K7.26.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             T1K7.26 protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            01-MAR-2001
01-MAR-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Thermoanaerobacteriales;
NCBI_TaxID=119072;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            01-MAR-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NCBI_TaxID-3702;
                                                                                                                                                     240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             290
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  274 LLRDFLFN 281
                                                                                                                                                                                              34
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Similarity
8; Conserv
                                                                                                                                                                                                                                         Similarity
8; Conserv
                                                                                                                                                                                                                                                                                                                               proteome.
751 AA;
                                                                                                                                                                                              TLRRRKKR
                                                                                                                                                     TLRRRKKR 247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LLRDFLFN
  (TrEMBLrel. 17,
                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Conservative (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PRELIMINARY;
                                             PRELIMINARY;
                                                                                                                                                                                              41
                                                                                                                                                                                                                                                                                                                            85546 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2.4%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             21,
21,
21,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     16,
16,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Thermoanaerobacteriaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Last sequence update)
  Created)
                                                                                                                                                                                                                                         0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Last sequence up
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Created)
                                                                                                                                                                                                                                                               Score 8;
Pred. No
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score Pred.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PRT;
                                                                                                                                                                                                                                                                                                                          1CEDA490F16E6AF7 CRC64;
                                                                                                                                                                                                                                         red. No. 19
Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ŏ
.
                                           786
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 751
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DB
13;
                                                                                                                                                                                                                                                             DB 16;
). 19;
                                                                                                                                                                                                                                                                                                                                                                                                                genome.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               æ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        update)
                                                                                                                                                                                                                                         0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                         Dong X., 1
                                                                                                                                                                                                                                                                                 Length 751;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 491;
                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                           g W., Ya
Ma Y.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Thermoanaerobacter.
                                                                                                                                                                                                                                                                                                                                                                                                                                                         Yang J.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  m C., Lam B.,
, Davis R.W.,
                                                                                                                                                                                                                                      0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Liu A.,
                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                         0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0;
```

```
RESULT 8
OPYGA3
ID OPYGA3
ID OPYGA
AC OPYG
DT 01-7
DT 01-7
DT 01-7
DT 01-7
OC AIC
OC Met
OC M
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RA White O., Alonso J., Altafi H., Araujo R., Bowman C.L., Brocks S.Y., RA Buehler E., Chan A., Chao Q., Chen H., Cheuk R.F., Chin C.W., RA Chung M.K., Conn L., Conway A.B., Cheuk R.F., Chin C.W., RA Chung M.K., Conn L., Conway A.B., Conway A.R., Creasy T.H., Dewar K., RA Dunn P., Etgu P., Feldblyum T.V., Feng J.-D., Fong B., Fujii C.Y., RA Gill J.E., Goldsmith A.D., Haas B., Hansen N.F., Hughes B., Huizar L., Ra Hunter J.L., Jenkins J., Johnson-Hopson C., Khan S., Khaykin E., RA Kim C.J., Koo H.L., Kremenetskala I., Kurtz D.B., Kwan A., Lam B., RA Langin-Hopper S., Lee J.M., Lenz C.A., Li J.H., Li Y.-P., RA Lin X., Liu S.X., Liu Z.A., Luros J.S., Maiti R., Marziali A., Langin-Hopper S., Lee A., Lee J.M., Lenz C.A., Li J.H., Li Y.-P., RA Lin X., Liu S.X., Liu Z.A., Luros J.S., Maiti R., Marziali A., RA Militscher J., Miranda M., Nguyen M., Nierman W.C., Osborne B.I., RA Pai G., Peterson J., Pham P.K., Rizzo M., Rooney T., Rowley D., RA Sakano H., Salzerg S.L., Schwartz J.R., Shinn P., Southwick A.M., Suh H., Tallon L.J., Tambunga G., Toriumi M.J., Town C.D., Witterback T., Van Aken S., Vaysberg M., Vysotskala V.S., Walker M., Wu D., Yu G., Fraser C.M., Venter J.C., Davis R.W.; Thallana."; Thallana."; Thallana.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local S
Matches 8
                                                                                                                                     J. Bacteriol.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Q9YGA3;
  MEDLINE=20225851; Pu
Paul L., Ferguson D.
"The trimethylamine
                                                                                                                                                         MEDLINE-97158682; PubMed=9006042;
Ferguson D.J. Jr., Krzycki J.A.;
"Reconstitution of trimethylamine-dependent
with the trimethylamine corrinoid protein an
methyltransferase II from Methanosarcina bar
J. Bacteriol. 179:846-852(1997).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Dimethylamine corrinoid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    01-NOV-1999
01-JUN-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MEDLINE=21016719; PubMed=11130712;
Theologis A., Ecker J.R., Palm C.J
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Arabidopsis thaliana (Mouse-ear cress).
Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosid
eurosids II; Brassicales; Brassicaceae; Arabidopsis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    01-JUN-2001 (TrEMBLrel. 17, La. 01-JUN-2001 (TrEMBLrel. 17, La. Hypothetical 88.6 kDa protein. F13K9.16.
                                                                                                                                                                                                                                                                                                                                                                                                                                 Methanosarcinaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                          Methanosarcina thermophila. Archaea; Euryarchaeota; Met
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Nature 408:816-820(2000).
EMBL; AC069471; AAG51492.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   STRAIN-CV.
                                                                                                         SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                   SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            01-NOV-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NCBI_TaxID=3702;
                                                                                                                                                                                                                                                                                                                                                                                                     NCBI_TaxID=2210;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Hypothetical protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    448
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      267
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GEAKAKEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  786
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   COLUMBIA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Α,
  PubMed=10762254;
D.J. Jr., Krzycki J.A.;
ne methyltransferase gen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   274
                                                                                                                                                                                                                                                                                                                                                                                                                                 Methanosarcina.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               88637 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2.4%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     . 12, Created)
. 12, Last seque
. 21, Last anno
                                                                                                                                                                                                                                                                                                                                                                                                                                                             Methanococci;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Last sequence update)
Last annotation updat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Last sequence up
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score 8; I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0F89AB3BC352CCE7 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Federspiel N.A.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (Fragment)
                                                                                                                                                                                                                                                                                                                                                                                                                                                             Methanosarcinales;
  gene and multiple dimethylamine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DB 1
), 20;
                                                                                                                                                                                          barkeri.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ₽
                                                                                                                                                                                                                   and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          10;
                                                                                                                                                                                                                coenzyme M methylation nd the isozymes of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 786;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Kaul
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              i C.Y.,
Huizar L.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Dewar K.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Rosidae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0
```

```
RESULT
Q9RQH4
                                                                                                                                                                                                                                                                                                                        ACCOMPAGNATION ACCOMP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RA Arakawa T., Hara A., Fukunishi Y., Konno H., Kadochi J., Fukuda S.,
RA Alzawa K., Izawa M., Nishi K., Kiyosawa H., Kondo S., Yamanaka I.,
RA Saito T., Okazaki Y., Gojobori T., Bono H., Kasukawa T., Saito R.,
RA Kadota K., Matsuda H.A., Ashburner M., Batalov S., Casavant T.,
RA Kadota K., Matsuda H.A., Ashburner M., Batalov S., Casavant T.,
RA Kuehl P., Lewis S., Matsuo Y., Nikaido I., Pesole G., Quackenbush J.,
RA Schriml L.M., Staubli F., Suzuki R., Tomita M., Wagner L., Washio T.,
RA Sakai K., Okido T., Furuno M., Aono H., Baldarelli R., Barsh G.,
RA Sakai K., Okido T., Furuno M., Aono H., Baldarelli R., Barsh G.,
RA Blake J., Boffelli D., Bojunga N., Carninci P., de Bonaldo M.F.,
RA Gustincich S., Hill D., Hofmann M., Hume D.A., Kamiya M., Lee N. H.,
RA Vyons P., Marchionii L., Mashima J., Mazzarelli J., Mombaerts P.,
RA Nordone P., Ring B., Ringwald M., Rodriguez I., Sakamoto N.,
Sasaki H., Toyo-oka K., Wang K.H., Weitz C., Whittaker C., Wilming L.,
RA Wynshaw-Boris A., Yoshida K., Hasegawa Y., Kawaji H., Kohtsuki S.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Q
                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                         Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Q9СИХЗ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RT DR RT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Matches
                                                                                                                                                                                                                                                                                                                                                                      EMBL; AKU145/3, Mapk8ip2
MGD; MGI:1926555; Mapk8ip2
InterPro; IPR000050; PID_d
                                                                                                                                                                                                                                                                                                                                            Pfam; PF00640;
NON_TER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    "Functional annotation of a full-length Nature 409:685-690(2001).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE FROM N.A.
STRAIN-C57BL/6J; TISSUE-HIPPOCAMBUS;
MEDLINE-2108566; PubMed-11217851;
Kawai J.; Shinagawa A., Shibata K.
                         10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Mus musculus (Mouse)
Eukaryota; Metazoa;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    01-JUN-2001 (TrEMBLrel. 17, Created)
01-JUN-2001 (TrEMBLrel. 17, Last sequence update)
01-DEC-2001 (TrEMBLrel. 19, Last annotation updat
3230402N03Rik protein (Fragment).
MAPK81P2 OR 3230402N03RIK.
                                                                                                                                                                                                                                   Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NCBI_TaxID=10090;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Eukaryota; Metazoa; Chordata;
Mammalia; Eutheria; Rodentia;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Q9CUY3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         methyltransferase genes of Methanosarcina barkeri contain in-frame read-through amber codons.",
J. Bacteriol. 182:2520-2529(2000).
EMBL; AF153452; AAB3520-2529(2000).
InterPro; IPR003312; B12-binding.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NON_TER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               9
                                                                                                                                                   214 AFLEYYQ 220
                                                                                                   38
                                                                                                                                                                                                                                                                                                                                                                                                                                       AK013573; BAB28912.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               269
                                                                                                                                                                                                            Similarity 7; Conser
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           52
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PF02310; B12-binding;
                                                                                                AFLEYYQ 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Similarity 7; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Shinagawa A., Shibata K., Yoshino M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AKAKELL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AKAKELL 275
                                                                                                                                                                                                                                                                                                                   59
                                                                                                                                                                                                       Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        59
                                                                                                                                                                                                                                                                                                                AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           58
                                                                                                                                                                                                                                                                                                                6877
                                                                                                                                                                                                                        2.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                6257 MW;
                                                                                                                                                                                                                                                                                                                                                                                          PID_domain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2.1%;
                                                                                                                                                                                        0;08;
                                                                                                                                                                                                                                                                                                             MW;
                                                                                                                                                                                                                                                       Score 7;
                                                                                                                                                                                                                                                                                                     35C6B6E84D02FC2C CRC64;
                                                                                                                                                                                              Pred. No. 22;
Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 7;
Pred. No
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Craniata; Vert
Sciurognathi;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    479E0F91115B5ECF CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          No.
                                                                                                                                                                                                                        DB 11;
5. 22;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DB 1;
). 22;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        mouse
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Vertebrata; Euteleostomi;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Muridae; Murinae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 update)
                                                                                                                                                                                              0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  cDNA collection.";
                                                                                                                                                                                                                                            Length 59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length 59
                                                                                                                                                                                           Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels
                                                                                                                                                                                      0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0;
                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     and
                                                                                                                                                                                   0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0;
                                                                                                                                                                                                                             В
                                                                 δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DЪ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δõ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ACCOMENS ACC
                                                                                                                                                                                                                                                       NON_TER
                                                                                                                                                                                                                                                                                                             AIDS;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ANE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   077822
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      11
                 80
```

В Qy

```
Query Match
Best Local S
Matches 7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
Best Local S
Matches 7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MEDLINE-20208566; PubMed-10746777;
Milohanic E., Pron B., Berche P., Gaill
"Identification of new loci involved ir
monocytogenes to eukaryotic cells.";
Microbiology 146:731-739(2000).
EMBL; AF104228, AAF04771.1; -.
InterPro; IPR001708; 60kDa_Innermeb.
Pfam; PF02096; 60KD_IMP; 1.
                                                                                                                                                                           Mulder-Kampinga G.A., Simonon A., Kuiken C
Scherpbier H.J., de Perre P., Boer K., Gou
"Similarity in env and gag genes between g
immunodeficiency virus type 1 (HIV-1) from
unrelated to time of HIV-1 RNA positivity
J. Virol. 69:2285-2296(1995).
                                                                                                                                                                                                                                                                                                                                                                                                        Q77822;
01-NOV-1996
                                                                                                     SEQUENCE
                                                                                                                                                        InterPro; IPR000777; GP120. Pfam; PF00516; GP120; 1.
                                                                                                                                                                                                                                                                   SEQUENCE FROM N.A. MEDLINE=95191002; PubMed=7884875;
                                                                                                                                                                                                                                                                                                                 Viruses; Retroid viruses; NCBI_TaxID=11676;
                                                                                                                                                                                                                                                                                                                                     Human immunodeficiency virus type
                                                                                                                                                                                                                                                                                                                                                                                01-NOV-1996
01-DEC-2001
                                                                                                                                                                                                                                                                                                                                                                  Envelope
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NON_TER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              O9ROH4;
O9ROH4;
O1-MAY-2000 (TremBLrel. 13,
O1-MAY-2000 (TremBLrel. 13,
O1-MAR-2002 (TremBLrel. 20,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    STRAIN-EGD,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Bacteria; Firmicutes;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NCBI_TaxID=1639;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Listeriaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SPOILIJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Stage III sporulation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Listeria monocytogenes.
                                                                                                                                      __Coat protein; Glycoprotein.
                      72 HLQEKYS 78
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               73 LQEKYSS
                                                   Similarity 7; Conser
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  l Similarity
7; Conserv
 HLQEKYS
                                                                                                                                                                                                                                                                                                                                                               protein (Fragment).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LQEKYSS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FROM N.A.
                                                                                                    94 AA;
                                                ilarity 100.0%;
Conservative (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    88 AA;
                                                                                                                                                                                                                                                                                                                                                                             (TrEMBLrel. 01, (TrEMBLrel. 01, (TrEMBLrel. 19,
                                                                                                                     94
                                                                                                                                                                                                                                                                                                                                                                                                                                 PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    88
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Listeria
86
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        79
                                                                                                    10793 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  88
10281 MW;
                                                                                                                     94
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Bacillus/Clostridium group; Bacillales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     protein
                                                                                                                                                                                                                                                                                                                        Retroviridae;
                                                                                                                                                                                                                    genes between genomic RNAs of human e 1 (HIV-1) from mother and inferent
                                                  0
                                                             Score
Pred.
                                                                                                                                                                                                                                                                                                                                                                           Last sequence up
                                                                                                                                                                                                                                                                                                                                                                                                    Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0;
                                                                                                E80573E5F9E2CC3D CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Last sequence update)
Last annotation update)
in J homolog (Fragment).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 7;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                F021AF158CEBD2BC CRC64;
                                               mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                 PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Mismatches
                                                                                                                                                                                                                                             Kuiken C.L., Dekker
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaillard J.L.;
                                                          DB 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        'n
                                                                                                                                                                                                                                                                                                                                                                                                                                94
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DB 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  88
                                                                                                                                                                                                                                                                                                                        Lentivirus
                                                                     15;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        adhesion
                                                                                                                                                                                                                                                                                                                                                                                                                              B
                                                                                                                                                                                                      m mother and infant is
in the child.";
                                                                                                                                                                                                                                                                                                                                                                                       update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A
                                                                                                                                                                                                                                                                                                                                                                         update)
                                              0;
                                                                     Length 94;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 88;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      of Listeria
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                     J.,
                                           0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0,
                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                         0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0
```

```
P94122
ID 4122
ID 4122
ID P9
DT 011
DT 011
DT 011
DT 02
OC ALC
OC
                                                                                                                                                                В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Q
밁
                                   Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local S
Matches 7
                                                                               Query Match
Best Local S
Matches 7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       01-MAY-1997
01-MAY-1997
01-DEC-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Q9NOW5;
Q1-QCT-2000 (TrEMBLrel. 15, Created)
Q1-QCT-2000 (TrEMBLrel. 15, Last sequence update)
Q1-DEC-2001 (TrEMBLrel. 19, Last annotation update)
Anti-human A33 light chain variable region (Fragment).
Oryctolagus cuniculus (Rabbit).
                                                                                                                                                                                      NON_TER
                                                                                                                                                                                                          Interpro; IPR003006; Ig_MHC.
Interpro; IPR003596; Ig_v.
Pfam; PP00047; Ig; 1.
SMART; SM00406; IGv; 1.
NON_TER 1
                                                                                                                                                                                                                                                                                                                                   MEDLINE-20250927; PubMed-10788485;
Rader C., Ritter G., Nathan S., Elia M., Gout I.,
Cohen L.S., Welt S., Old L.J., Barbas C.F. III.;
"The rabbit antibody repertoire as a novel source
of therapeutic human antibodies.";
J. Biol. Chem. 275:13668-13676(2000).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Lagomorpha; Leporidae; Oryctolagus. NCBI_TaxID=9986;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Q9N0W5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Organization.";
J. Bacteriol. 179:1344-1353(1997).
EMBL; Y09614; CAA70829.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Purschke W.G., Schmidt C.L., Petersen A., Schaefer G.; "The Terminal Quinol Oxidase of the Hyperthermophilic Ar Acidianus ambivalens Exhibits a Novel Subunit Structure
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE FROM N.A. STRAIN-DSM 3772;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Hypothetical
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             P94122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MEDLINE-97175566; PubMed-9023221;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Archaea;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Acidianus
                                                                                                                                                                                                                                                                                                                      HSSP; P80362;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Hypothetical
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NCBI_TaxID=2283;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Acidianus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       205
                                       277
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  87
27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 7; Conserv
                                                                                 Similarity 7; Conser
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   s ambivalens (De Crenarchaeota;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       KEKHKAL 211
                                       DFLFNGV 283
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  KEKHKAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       107 AA; 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (TrembLrel. 03, Created)
(TrembLrel. 03, Last sequence update)
(TrembLrel. 19, Last annotation update)
| 12.0 kDa protein.
                                                                                                                                                                109 AA;
                                                                                                                                                                                         109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2.1%;
llarity 100.0%;
Conservative
                                                                               2.1%;
larity 100.0%;
Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRELIMINARY;
                                                                                                                                                                                                                                                                                                                    1WTL.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  93
                                                                                                                                                                11323 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     11955 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (Desulfurolobus ambivalens).
ta; Thermoprotei; Sulfolobales; Sulfolobaceae;
                                                                                 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0,
                                                                               Score 7; DB 6
Pred. No. 38;
0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 7;
Pred. No
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRT;
                                                                                                                                                                BD8B396EE75F94FB CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       BFC3623DB2B62878
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             107
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            109
                                                                                        DB
38;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DB 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8
                                                                                                                       6,
                                                                                                                       Length 109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 107
                                                                               0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                   for
                                                                                                                                                                                                                                                                                                                                                                                                                                       Jungbluth
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels
                                                                                                                                                                                                                                                                                                                                                                                                   the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Archaeon
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            and
                                                                                                                                                                                                                                                                                                                                                                                                   generation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gene
                                                                             0;
                                                                                                                                                                                                                                                                                                                                                                                                                                           A.A.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0,
                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0;
                                                                             0
```

```
RESULT OPAFZ5
ID AFZ5
ID AFZ5
ID AFZ5
ID OPAFZ5
ID OPAFZ
ρ
                                                                                                                 RESULT
Q8VSP8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local S
Matches 7
                                                       Query Match
Best Local
                                       Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              O8VSP8

O8VSP8;

O1-MAR-2002 (TIEMBLIEL 2

O1-MAR-2002 (TIEMBLIEL 2

O1-MAR-2002 (TIEMBLIEL 2

O1-MAR-2002 (TIEMBLIEL 2
                                                                                                                                                                                                                              Yuan Z.H.,
Hou Y.D.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Q9AFZ5
Q9AFZ5;
                                                                                                                                                                                          "Complete
pCP301 of
                                                                                                                                                                                                                                                Jin Q., Zhang J.Y., Liu H., Yang J., Yang F., Zhang X.B., I Yang G.W., Wu H.T., Dong J., Sun L.L., Yue Y., Zhao A.L., I Zhu J.P., Kan B., Chen S.X., Yao Z.J., He B.K., Chen R.S., Yuan Z.H., Xu J.G., Wang Y., Shen Y., Lu W.C., Qiang B.Q.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Infect. Immun. 69:3271-3285(2001).
EMBL; AF348706; AAK18325.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       "Complete DNA sequence and analysis Shigella flexneri.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MEDLINE-21189246;
Venkatesan M.M., G
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Plasmid virulence plasmid
Bacteria; Proteobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Shigella flexneri.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             01-JUN-2001 (TrEMBLrel.
01-JUN-2001 (TrEMBLrel.
01-DEC-2001 (TrEMBLrel.
                                                                                                                 SEQUENCE
                                                                                                                                                      EMBL; AF386526;
                                                                                                                                                                      Submitted
                                                                                                                                                                                                                                                                                                                             STRAIN-301;
                                                                                                                                                                                                                                                                                                                                               SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                 NCBI_TaxID=42897;
                                                                                                                                                                                                                                                                                                                                                                                                         Shigella.
                                                                                                                                                                                                                                                                                                                                                                                                                       Bacteria; Proteobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                          Plasmid pCP301.
                                                                                                                                                                                                                                                                                                                                                                                                                                                            Shigella flexneri
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Transposase-like
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Plasmid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NCBI_TaxID=623;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Shigella.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Blattner F.R.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           hypothetical.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               91
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              97
97 SKIRLLR 103
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Similarity
7; Conser
                                                           Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SKIRLLR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SKIRLLR 103
                                                                                                                                                  DNA sequence and analysis of the Shigella flexneri."; (MAY-2001) to the EMBL/GenBank/DD 86526; AAL72476.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    124
                                                                                                                 124 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Conservative
                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 97
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ; PubMed=11292750; Goldberg M.B., Rose
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                              2a
                                                                                                                 13765 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    13738 MW;
                                                       2.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               17,
17,
19,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    20,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  pwr.501.
gamma sı
                                                                                                                                                                                                                                                                                                                                                                                                                       gamma
                                     Score 7; DB 2; Pred. No. 43; 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Created)
Last sequence update)
Last annotation update)
                                     0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0
                                                                                                                                                                        EMBL/GenBank/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Last sequence update)
Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Score 7;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Pred.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    OA4B2644297B8E1E
                                                                                                                 1BBB37A5D97B8E03 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  subdivision;
                                                                                                                                                                                                                                                                                                                                                                                                                         subdivision;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               of the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   D.J.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 124
                                               DB
43;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DB
43;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2
                                                                           2
                                                                                                                                                                                                              large virulence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               large virulence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Grotbeck
                                                                                                                                                                                                                                                                                                                                                                                                                         Enterobacteriaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Enterobacteriaceae;
                                     0;
                                                                                                                                                                        databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 124
                                                                           Length 124;
                                       Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     E.J.,
                                                                                                                                                                                                                                                                    Wang J.H.,
Gao Y.S.,
Ma D.L.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Burland
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               plasmid of
                                                                                                                                                                                                              plasmid
                                                                                                                                                                                                                                                    Wen Y.M.
                                       0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0;
                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ٧.,
                                       0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0;
```

밁

91

SKIRLLR

Search completed: June 24, 2003, 18:55:43 Job time : 29 secs

```
Result
No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Run
                                                                                                                                                                                                                                                                                                                                                                                                                                                          Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Minimum DB
Maximum DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Perfect score:
Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            OM protein - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          on:
                                                                                                                                                                                                                               Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
    339.5
217.5
217.5
205
172.5
172.5
122.5
121.5
109.5
109.5
109.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     seq length: 0 seq length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                          SPTREMBL_21:*
1: sp_archea:*
2: sp_bacteria
3: sp_fungi:*
    100.0
81.2
31.3
19.7
112.6
112.5
117.9
110.0
7.1
7.1
7.1
7.1
6.4
6.4
6.2
6.1
                                                                                                                                                                              Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          BLOSUM62
Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                         e
Query
                                                                                                                                                                                                                                                                                                                     4:
6:
7:
7:
10:
111:
112:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        671580 seqs, 206047115 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-09-870-406A-33
1724
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 June 24, 2003, 18:31:45; Search time 44 Seconds (without alignments) 1540.670 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MALSMEFGFSIGSCFKAPNP......SIIGKSYETRPWDLTGQFIG 329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GenCore version 5.1.6 Copyright (c) 1993 - 2003 Compugen Ltd.
                                                                                                                                                                                                                                                                                            sp_vertebrate:*
sp_unclassified:*
sp_rvirus:*
                                                                                                                                                                                                                                                                                                                                                                                                                                    sp_archea:*
sp_bacteria:*
                                                                                                                                                                                                                                                                                                                                                           sp_phage: *
                                                                                                                                                                                                                                                                                                                                                                        sp_organelle:*
                                                                                                                                                                                                                                                                                                                                                                                  sp_mammal:*
sp_mhc:*
                                                                                                                                                                                                                                                                                                                                                                                                       sp_invertebrate:*
                                                                                                                                                                                                                                                                                                                                                                                                                  sp_human:*
                                                                                                                                                                                                                                                                          sp_bacteriap:*
sp_archeap:*
                                                                                                                                                                                                                                                                                                                                         sp_plant:*
sp_rodent:*
                                                                                                                                                                                                                                                                                                                               sp_virus:*
                                                                                                                                                                               Length DB
    216
              Q9KWY6
Q55891
                                 Q9SR43
Q9SSR56
Q93TM8
Q93TM9
Q9X4U5
Q9X4U5
Q9X1N7
Q93SN7
Q93SN8
Q93SN8
Q93TN0
Q93TM9
Q93TM9
                                                                                                                                                                                ij
                                                                                                                                                                                                               SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    671580
Q9sr43 arabidopsis
Q9ss72 arabidopsis
Q8ss76 oryza sativ
Q9stm8 nostoc punc
Q93mm9 synechococc
Q94tu5 prochloroco
Q93t16 nostoc punc
Q93sn7 prochloroco
Q93tn8 prochloroco
Q93tn0 anabaena sp
Q93tm9 nostoc punc
Q3110 anabaena sp
Q93tm9 nostoc punc
Q3113 bacillus st
Q55891 synechocyst
Q30422 caldocellum
                                                                                                                                                                              Description
```

91	91	91	91	91.5	91.5	91.5	91.5	92	92	92.5	93	93	93	93	93.5	93.5	93.5	94	94	94.5	95	95	95.5	96	96.5	97.5	98	101.5
5.3	ა ა	თ	ა	ω	ω	ω	5 3	ა ა	5.3	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4											
2100	2091	1073	830	3119	1382	962	841	1348	747	673	289	289	289	289	2819	1680	386	1452	392	369	1723	574	595	852	241	521	276	492
Ĺ	16	w	ഗ	5	4	11	17	ۍ.	w	ъ	N	N	ຎ	N	16	4	16	16	10	16	u	N	16	4	N	11	10	13
P87112	Q97J50	Q06839	Q9VNZ7	Q25857	Q9BX80	Q9JLI8	059612	Q9VDT3	094058	Q9TYY1	Q9Z374	Q9Z3C9	Q924N0	Q924M9	Q98QP8	Q9P1Z9	Q9CIY3	Q97DN0	Q8VXY3	Q8RHA9	Q8WRD0	099002	Q92FZ7	Q96NU4	Q93TL5	Q8R3A8	Q9LHL4	Q98T96
P87112 schizosacch	Q97j50 clostridium	Q06839 saccharomyc		Q25857 plasmodium	Q9bx80 homo sapien	Q9jli8 mus musculu	059612 pyrococcus	Q9vdt3 drosophila	094058 candida alb		Q9z374 legionella			Q9z4m9 legionella	Q98qp8 mycoplasma		Q9ciy3 lactococcus	Q97dn0 clostridium	Q8vxy3 arabidopsis	Q8rha9 fusobacteri	Q8wrd0 plasmodium	S	Q92fz7 rickettsia		Q93tl5 prochloroco	Q8r3a8 mus musculu	Q91h14 arabidopsis	Q98t96 brachydanio

## ALIGNMENTS

Query Match Best Local Similarity Matches 329; Conser	"The Arabidopsis Ferredoxin-Depen Perredoxin-Depen Plant Cell 13:42 EMBL; ACO11436; EMBL; ABO45112; SEQUENCE 329 A				SR43 Q9SR43
100.0%; Score 1724; DB 10; 100.0%; Pred. No. 6.2e-136; vative 0; Mismatches 0;	HYZ Gene Encodes Phytochromobilin Syrdent Biliverdin Reductase."; 15-436(2001). AAF14017.1; BAB33374.1; - BA 38129 MW; 98727CD1778D973C CRC64;	[2] SEQUENCE FROM N.A. MEDLINE-21124703; PubMed-11226195; Kohchi T., Mukougawa K., Frankenberg N., Masuda M., Lagarias J.C.;	SEQUENCE FROM N.A. STRAIN=CV. COLUMBIA; Lin X., Kaul S., Town C.D., Benito M., Creasy T.H., Haas B., Lin X., Kaul S., Town C.D., Benito M., Creasy T.H., Haas B., Ronning C.M., Koo H., Fujii C.Y., Utterback T.R., Barnstead M.E., Bowman C.L., White O., Nierman W.C., Fraser C.M.; "Arabidopsis thaliana chromosome III BAC F3L24 genomic sequence."; Submitted (NOV-1999) to the EMBL/GenBank/DDBJ databases.	01-MAY-2000 (TrEMBLrel. 13, Created) 01-MAY-2000 (TrEMBLrel. 13, Last sequence update) 01-MAY-2000 (TrEMBLrel. 17, Last annotation update) 01-UN-2001 (TrEMBLrel. 17, Last annotation update) F3L24.1 protein (PHYTOCHROMOBILIN synthase HY2 protein). F3L24.1 OR HY2. Arabidopsis thaliana (Mouse-ear cress). Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Epermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae; eurosids II; Brassicales; Brassicaceae; Arabidopsis. NCBI_TaxID=3702;	PRELIMINARY; PRT; 329 AA.
Length 329; Indels 0; Gaps 0;	Synthase, a	, Yokota A.,	, Haas B., Barnstead M.E., omic sequence."; bases.	tein). tein). a; Tracheophyta; eudicots; Rosidae;	

61

```
Lin X., Kaul S., Town C.D., Benito M., Creasy T.H., Haas B., Ronning C.M., Koo H., Fujii C.Y., Utterback T.R., Barnstead M.E. Bowman C.L., White O., Nierman W.C., Fraser C.M.; "Arabidopsis thaliana chromosome III pl MZB10 genomic sequence." Submitted (JAN-2001) to the EMBL/GenBank/DDBJ databases. EMBL; AC00936; AAD56331.1; -. SEQUENCE 273 AA; 31909 MW; 06E94227646E6E87 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Arabidopsis thaliana (Mouse-ear cress).

Bukaryota; Viridiplantae; Streptophyta; Embryophyta; Spermatophyta; Magnoliophyta; eudicotyledons; core e eurosids II; Brassicales; Brassicaceae; Arabidopsis.
                                                                                        NCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLRDFLFNGVDELGTKTFIDYFPEYQT
                                                                                                                                                             MEPEYDTPIFCANFTTSTNVNIVVLDLNPLHQLTDQTDYQDKYYNKIMSIYHKYAETFPW
                                                                                                                                               MEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTDYQDKYYNKIMSIYHKYAETFPW
                                                                                                                                                                                                              ETRKRIVLEPSHL-----
                                                                                                                                                                                                                              ETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIENETMQVFDFAGF 120
                                                                                                                                                                                                                                                                     MALSMEFGFSIGSCFKAPNPPVLISASPNKINFTLRRRKKFFLLRVSAVSYKEFAESALE
                                                                                                                                                                                                                                                        MALSMEFGFSIGSCFKAPNPPVLISASPNKINFTLRRKKRFLLRVSAVSYKEFÄESALE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EDGTVSDKRSIIGKSYETRPWDLTGQFIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       EDGTVSDKRSIIGKSYETRPWDLTGQFIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GGKLTGESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GGKLTGESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTDYQDKYYNKIMSIYHKYAETFPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLFDQTDYQDKYYNKIMSIYHKYAETFPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ) (TrEMBLrel.)
) (TrEMBLrel.)
! (TrEMBLrel.)
                                                                                                                                                                                                                                                                                                                       Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PRELIMINARY;
                                                                                                                                                                                                                                                                                                                               81.2%;
83.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      13,
13,
19,
                                                                                                                                                                                                                                                                                                                    0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Created)
Last sequence update)
Last annotation update)
                                                                                                                                                                                                                                                                                                                Score 1400; DB 10;
Pred. No. 5.5e-109;
0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        273
                                      329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Embryophyta; Tracheophyta; edons; core eudicots; Rosid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A
                                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                  Barnstead M.E.,
                                                                                                                                                                                                                                                                                                                                         Length
                                                                                                                                                                                                                                                                                                             56;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Rosidae;
                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                141
                                        244
                                                                                           201
                                                                                                                     240
                                                                                                                                                                         180
                                                                                                                                                                                                    81
                                                                                                                                                                                                                                                         60
                                                                                                                                                                                                                                                                                  60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  120
                                                                                                                                                                                                                                                                                                           2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    60
                    RESULT 4
Q93TM8
ID Q93T
AC Q93T
AC Q93T
DT 01-D
DT 01-D
DT 01-D
DE Phyc
GN PEBB
OS NOST
OC NCB1
RN [1]
RN [1]
RN [1]
RN FTAN
RT FTAN
RT FTAN
RT b111
RL Plan
                                                                                                                                                                                                                                                                                                                                 δã
                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                        Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       뫄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local S
Matches 124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ď
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     δÃ
SEQUENCE FROM N.A.

MEDLINE-21178821; PubMed-11283349;
Frankenberg N., Mukougawa K., Kohchi T., Lagarias J.C.;
Frankenberg n., Mukougawa K., Kohchi T., Lagarias J.C.;
Functional genomic analysis of the HY2 family of ferredoxin-dependent bilin reductases from oxygenic photosynthetic organisms.";
Plant Cell 13:965-978(2001).
                                                                                                                                                                               Q93TM8;
Q93TM8;
Q1-DEC-2001
Q1-DEC-2001
Q1-DEC-2001
                                                                                                          NCBI_TaxID=63737;
                                                                                                                       Nostoc punctiforme.
Bacteria; Cyanobacteria;
                                                                                                                                                               01-DEC-2001 (TremBLrel. 19, 0
01-DEC-2001 (TremBLrel. 19, 1
01-DEC-2001 (TremBLrel. 19, 1
Phycoerythrobilin:ferredoxin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Q8RZB6;
Q1-JUN-2002 (TrEMBLrel. 21, C
Q1-JUN-2002 (TrEMBLrel. 21, L
Q1-JUN-2002 (TrEMBLrel. 21, L
B1147AQ4.9 protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      STRALM-U., Matsumoto T., Yamamoto K.;
Sasaki T., Matsumoto T., Yamamoto K.;
"Oryza sativa nipponbare(GA3) genomic DNA, chromosome 1,
clone:Bi147A04.";
Submitted (JUN-2001) to the EMBL/GenBank/DDBJ databases.
EMBL; AP03735; BAB86192.1;
EMBL; AP03735; BAB86192.1;
SEGUTENCE 240 AA; 27459 MW; 7C3433A04E5FE9E2 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Oryza sativa (japonica cultivar-group).
Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; Liliopsida; Poales; Poaceae;
Ehrhartoideae; Oryzeae; Oryza.
NCBI_TaxID=39947;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Q8RZB6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ω
                                                                                                                                                                                                                                                                                                       196
                                                                                                                                                                                                                                                                                                                               290
                                                                                                                                                                                                                                                                                                                                                           153
                                                                                                                                                                                                                                                                                                                                                                                   230
                                                                                                                                                                                                                                                                                                                                                                                                              137
                                                                                                                                                                                                                                                                                                                                                                                                                           170 IYHKYAETFPWGGKLTGESIKFFSPLYMWTRFSSSKEKHKALFSAFLEYYQAWLEWTIQV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             111
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   77
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       17
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               51
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Similarity
                                                                                                                                                                                                                                                                                             SFLDYFPEYARDDGSVNKKRSMIGKSFETRPWDANGEFIG
                                                                                                                                                                                                                                                                                                           TFIDYFPEYQTEDGTVSDKRSIIGKSYETRPWDLTGQFIG
                                                                                                                                                                                                                                                                                                                                                              REEMEPSHVRANCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLRDFLFNGVDELGTK
                                                                                                                                                                                                                                                                                                                                                     IKENNKATIARNQEEQHKYLTWRAEKD
                                                                                                                                                                                                                                                                                                                                                                                                              LVHKYNE---
                                                                                                                                                                                                                                                                                                                                                                                                                                                       NSYQVLDFAAFSEPEYDLPIFCANVFTTHAQSIVVLDLNPLYDTTVHKDYKDKYYRSIMP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          YHKFVSFALEETRLRTTLTPHPSQEKFKSIKPNDDNTVFNALSFSAPKIRLLRSLTIEKK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          YKEFAESALEETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIENE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      -TMQVFDFAGEMEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTDYQDKYYNKIMS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EDGTVSDKRSIIGKSYETRPWDLTGQFIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           EDGTVSDKRSIIGKSYETRPWDLTGQFIG
                                                                                                                                                                                                                                  PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NIPPONBARE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   34.3%;
                                                                                                                        Nostocales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     29;
                                                                                                                                                            Last sequence update)
Last annotation updat
oxidoreductase.
                                                                                                                                                                                                       Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Created)
Last sequence update)
Last annotation updat
                                                                                                                                                                                                                                  PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Pred.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 592;
Pred. No. 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Mismatches
                                                                                                                     Nostocaceae;
                                                                                                                                                                                                                                 255
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            240
                                                                                                                                                                                                                                 B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             273
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DB 10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                .4e-41;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A
                                                                                                                                                                          update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    65;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      update)
                                                                                                                    Nostoc
                                                                                                                                                                                                                                                                                                235
                                                                                                                                                                                                                                                                                                                        329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length
                                                                                                                                                                                                                                                                                                                                               ---LVMEFLFEGVNTLGTK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         BAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 62;
                                                                                                                                                                                                                                                                                                                                                                                                 VWLELMDQA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                               195
                                                                                                                                                                                                                                                                                                                                                                         289
                                                                                                                                                                                                                                                                                                                                                                                                   152
                                                                                                                                                                                                                                                                                                                                                                                                                             229
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          76
```

SEQUENCE FROM N.A. STRAIN-CV. COLUMBIA;

맑 δÃ В Qy 망 ΩV 밁 δõ B Š

301 301 241 241 181 181 121 121

Q9SS72 Q9SS72; Q1-MAY-2000 Q1-MAY-2000 Q1-DEC-2001

MZB10.18 MZB10.18.

protein.

Query Match Best Local S Matches 273

Similarity

273;

밁 γ В Qy 밁 QΨ ₽ Qγ B Qy

202

NCEAQHKYLTWRAQ

142 181

121 82

61 61

ш

ш

```
RESULT CO SAME RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               망
                                                                                                                                                        δδ
                                                                                                                                                                                                                                                                  Š
                                                                                                                                                                                                                                                                                                                                      망
                                                                                                                                                                                                                                                                                                                                                                               δŌ
                                                                                                                                                                                                                                                                                                                                                                                                                                            В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Вb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SQ
밁
                                         5
                                                                                                      В
                                                                                                                                                                                                                         ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
Best Local (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Q93MM9 PRELIMINARY; PRT; 257 AA.
Q93MM9;
01-DEC-2001 (TrEMBLrel. 19, Created)
01-DEC-2001 (TrEMBLrel. 19, Last sequence update)
01-DEC-2001 (TrEMBLrel. 19, Last annotation updat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           EMBL; AF339058; AAK38589.1; -. SEQUENCE 255 AA; 29293 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            bilin reductases from oxygenic photosynthetic organisms. Plant Cell 13:965-978(2001).

EMBL; AF400985; AAK77916.1; -.

SEQUENCE 257 AA; 29289 MW; 26D65B6E8E7BFE8C CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MEDLINE-21178821; PubMed-11283349; Frankenberg N., Mukougawa K., Kohchi T., Lagarias J.C.; "Functional genomic analysis of the hy2 family of ferredoxin-dependent
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Synechococcus sp. (strain WH8020).
Bacteria; Cyanobacteria; Chroococcales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Phycoerythrobilin:ferredoxin oxidoreductase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NCBI_TaxID-32052;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE FROM N.A.
                                                                                                                                                                                                                            121
                                                                                                                                                                                                                                                                              147
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           278
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          158
238 TRFHGSEWTEAYIHTVLFD
                                                                                                                                                                 207
                                                                                                                                                                                                                                                                                                                                         61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    34 TLRRRKKRFLLRVSAVSYKEFAESALEETRKRIVLEPSHLQEKY---SSMTGLDGKT---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          45
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               76;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               σ
                                                                                                                                                                                                                                                                                                                                                                                                                                               2 TNQRFKSTDPVNIEGWSWQPFLEDAIKRL-EGLNVEPYPVPDRFLQREDQTGSKSKSIPV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DYQDKYYNKIMSIYHKYAETFPWGGKLTGESIKFFSPLVMWTRFSSSKEKHKALFSAFLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AYQAKYTEPILPIFHAHQQHLSWGGDFPEEAQPFFSPAFLWTRPQETAVVETQVFAAFKD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LRQIRAAHVQGGNSLQVLNFVIFPHLNYDLPFFGADLVTLPGGHLIALDMQPLFR--DDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    IRLLRSMAIE-NETMQVFDFAGFMEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RSDVTLYQPFLDYAIAYMRSRLDLEPYPIPTGFESNSAVVGKGKNQEEVVTTSYAFQTAK
                                                    KRLVGEAKAKELLRDFLFN 281
                                                                                                                                             KHKALFS----AFLEYYQAWLEMTIQVREEMEPSHVRANCEAQHKYLTWRAQKDPGHGLL
                                                                                                                                                                                                                                                                           LNPLHQLTDQTDYQDKYYNKIMSIYHKYAETFPWGGKLTGESIKFFSPLYMWTRFSSSKE
                                                                                                                                                                                                                                                                                                                                      TTATWACKTEKFRQVRAACVSAGSAASVLNFVINPKSTYDLPFFGGDLVTLPAGHLLALD
                                                                                                                                                                                                                                                                                                                                                                                          ELQMLAFKSSKIRLLRSMAIE-NETMQVFDFAGFMEPEYDTPIFCANFFTSTNVNIVVLD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FLFD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FLFN 281
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                YLKAYLDFVEQAEAVTDSQNLVAIKQAQLRYLRYRAEKDPARGMFKRFYGAEWTEEYIHG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        YYQAWLEMTIQVREEMEPSHVRANCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLRD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RVSAVSYKEFAESALEETRKRIVLEPSHLQEKYSSMTGLDGKTELQ------MLAFKSSK
                                                                                                            GDELIQSIVRPAFNDYLDLYLELAASA-ERVTDERSEVLLQGQRKYTDYRAEKDPARGML
                                                                                                                                                                                                                      LQPAIK-TDEV-HTTHVWDRLIPIFERWRDQLPYGGPIPEEAQPFFSPGFLWTRLPLGEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         12.6%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         19.7%; Score 339.5; DB 2; 31.1%; Pred. No. 1.8e-20; tive 51; Mismatches 108;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  55;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Score 217.5; DB 2;
Pred. No. 2.9e-10;
5; Mismatches 125;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           5D174CFE615D9D91 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Synechococcus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    255;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       257;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               15;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               9;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                             146
                                                                                                                                                                                                                                                                                                                                                                                                                                                  60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               64
                                                                                                                                                                                                                         178
                                                                                                                                                                                                                                                                              206
                                                                                                                                                                                                                                                                                                                                      120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           277
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                182
```

```
ORESULT

ORE
                                                                                                                                                          RESULT 7
293TL6
1D 293T
AC 293T
AC 293T
DF 01-E
DF 15,1
DE 15,1
DE 15,1
DE 15,1
DE 15,1
DE 15,1
DF 15,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local S
Matches 59
Query Match
Best Local S
Matches 72
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Q93TL6;
Q93TL6;
01-DEC-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     QYK415;
QYK415;
01-OCT-2000 (TrEMBLrel. 15, Createu)
01-OCT-2000 (TrEMBLrel. 15, Last sequence update)
01-OCT-2000 (TrEMBLrel. 15, Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          "Organization of the ORE241/257 coding region marinus SSI20.";
Submitted (JUN-2000) to the EMBL/GenBank/DDBJ EMBL; AJ278499; CAB95701.1;
                                                                                                                                                          bilin reductases from oxygenic photosynthetic Plant Cell 13:965-978(2001).
EMBL; AF352049; AAK38598.1; -.
SEQUENCE 280 AA; 32912 MW; D0A27357A7C549D
                                                                                                                                                                                                                                                                                                                     SEQUENCE FROM N.A.
MEDLINE=21178821; PubMed=11283349;
Frankenberg N., Mukougawa K., Kohchi T., Lagarias J.C.;
"Functional genomic analysis of the HY2 family of ferredoxin-dependent
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    01-DEC-2001 (TrEMBLrel: 19, Created)
01-DEC-2001 (TrEMBLrel. 19, Last sequence update)
01-DEC-2001 (TrEMBLrel. 19, Last annotation update)
15,16 dihydrobiliverdin:ferredoxin oxidoreductase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Hypothetical protein. SEQUENCE 257 AA; 29770 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Bacteria; Cyanobacteria; Prochlorophytes; Prochlorococcaceae; Prochlorococcus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Q9K4U5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TEBA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               STRAIN-SS120;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Bacteria; Cyanobacteria; Nostocales; Nostocaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Nostoc punctiforme
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NCBI_TaxID=1219;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NCBI_TaxID=63737;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   σ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            180 WGGKLTGESIKFFSPLVMWTRFSSSKEK----HKALFSAFLEYYQAWLEMTIQVREEMEP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           94 HPLNDYDLPFFGADFVTLPNGHLLALDLQPALKL--DNIHTENVWPRLIPLHDHWQSLLP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             68 LEPSHLQEKYSSMTGLDGK-----TELQMLAFKSSKIRLLRSMAIE-NETMQVFDFAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Similarity
                                         Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ERALKILEGQKAYINYRSTKDPARAMLCRFYGKEWTEDYIHKVLFN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SHVRANCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLRDFLFN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SGGEIPKEAEPYFSPGFLWSRLPLSKESDNIISEILRPAFGEYLSLYIEL-LHIAKPLKK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EMEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTDYQDKYYNKIMSIYHKYAETFP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      IEPYPVSHDFLSKESITGSRRNPVHVTTLTWAA-KFEKIKQVRLACIKGGESLSVFNLLI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRELIMINARY;
                                     11.9%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      12.5%; Score 215; 26.1%; Pred. No. 4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 48;
    54;
Score 205; DB
Pred. No. 3.5e
54; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EMBL/GenBank/DDBJ databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRT;
                                                                                                                                                              D0A27357A7C549DA CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           4BAF261812D1F35C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                257
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             280
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      4.6e-10;
                                     DB 2;
.5e-09;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ₿
    127;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     103;
                                                                                                                                                                                                                                                                                    organisms.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                from Prochlorococcus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 257;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CRC64;
                                                                       Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     16;
    20;
    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          93
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               151
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 6;
    9;
```

Ş

22 VLISASPNK-----INFTLRRRKKRFLLRV--SAVSYKEFAESALEETRKRIVLE----

```
RESULT
Q93SN8
                                                                                                                                              QY
         AC ID
                                                                                                                      吊
                                                                                                                                                                                        밁
                                                                                                                                                                                                                        δÔ
                                                                                                                                                                                                                                                             Ъ
                                                                                                                                                                                                                                                                                             δÃ
                                                                                                                                                                                                                                                                                                                                        망
                                                                                                                                                                                                                                                                                                                                                                    δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                 В
                                                                                                                                                                                                                                                                                                                                                                                                                                                 δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       γQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               B 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ъ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Вb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches
         Q93SN8;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Bacteria; Cyanobacteria; Prochlorophytes; Prochlorococcus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Frankenberg N., Mukougawa K., Kohchi T., Lagarias J.C.;
"Functional genomic analysis of the HY2 family of ferredoxin-dependent
bilin reductases from oxygenic photosynthetic organisms.";
Plant Cell 13:965-978(2001).
EMBL; AY030301; AAK38142.1;
SEQUENCE 257 AA; 29872 MW; 02960652689ADD58 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    01-DEC-2001 (TrEMBLrel. 19, Created)
01-DEC-2001 (TrEMBLrel. 19, Last sequence update)
01-DEC-2001 (TrEMBLrel. 19, Last annotation update)
01-DEC-2001 (TrEMBLrel. 19, Last annotation update)
Purcell (Tremble (T
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MEDLINE-21178821; PubMed-11283349;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Q93SN7;
01-DEC-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Q93SN7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NCBI_TaxID=59919;
                                                             9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          œ
                                                                                                                      233
                                                                                                                                                       262
                                                                                                                                                                                            174
                                                                                                                                                                                                                                                                   116
                                                                                                                                                                                                                                206
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                235
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  248
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       176
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                129
                                                                                                                                                                                                                                                                                                                                                                              86
                                                                                                                                                                                                                                                                                                                                                                                                                                                     29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     70
                                                                                                                                                                                                                                                                                                                                                                                                                    G
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ш
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Similarity
                                                                                                                                                                                      DSDNLIENQLYDSFKEYLNLYLK-TLFESEEYGHGLQQELINGQNDYLNYRRDNDPARPM
                                                                                                                                                                                                         DFQP--SLKVENQFNSELLEQIIKLKKSCHSSLPVAEKMSEDVAKFFSPGLIWSRLAKHQ
                                                                                                                 LSSLFGKDFTESLINKVLFS
                                                                                                                                                     LKRLVGEAKAKELLRDFLFN
                                                                                                                                                                                                                                                                                                 DLNPLHQLTDQTDYQDKYYNKIMSIYHKYAETFPWGGKLTGESIKFFSPLVMWTRFSSSK
                                                                                                                                                                                                                                                                                                                                                                                                             NTIFYSQEWRWAKFI-----KFLISQLDNYHCVEHKIASDFSYKESSYGSKKSKKN
                                                                                                                                                                                                                                                                                                                                                                                                                                                 NKINFTLRRKKRFLLRVSAVSYKEFAESALEE---TRKRIVLEPSHLQEKYSSMTGLDG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    INLETWGATHQKRINFARAVCINSPNYSVLNFLIIPKTSYNIPELGVDFVSLPTSHLLVL
                                                                                                                                                                                                                                                                                                                                                                          KTELQMLAFKSSKIRLLRSMAIENETMQVFDFAGFMEPEYDTPIFCANFFTSTNVNIVVL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   YLTWRAQKDPGHGLLKRLVGEAKAKELLRDFLF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              YDQYSADRDPASGLFSSYFGHEWAERFLHEFLF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ANQYFSKYLLFAK-TDAETVSTRVFEAFQDYLNLYWQMLADAQALHDFEDIQRIVKAQKD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRANCEAQHK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LLGIDFLSFGKVKNLIVLDFQPLFQ---DEDYQNKYIAPLKYLHNKYPDLAQNLEMKFYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           IFCANFFTSTNV-NIVVLDLNPLHQLTDQTDYQDKYYNKIMSIYHKYAETFPWGGKLTGE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PPGLEFKVSD-RGRNPAT-IRSWCYQSQELRKIRYTYIDAGESAQIFNSVVYPSHNYDLP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIE-NETMQVFDFAGFMEPEYDTP
                          PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           10.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          52;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 172.5; DB 2
Pred. No. 1.6e-06;
52; Mismatches 134
                        PRT;
                                                                                                                   252
                                                                                                                                                     281
                        236
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MED4)
                        B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Prochlorococcaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DB 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              267
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                280
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        19;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                      145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             187
                                                                                                                                                                                                                                                             173
                                                                                                                                                                                                                                                                                                                                                                                                               55
                                                                                                                                                                                                                                                                                                                                                                                                                                                   85
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   234
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 10
Q9K4U6
   Š
                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ğ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  뭥
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local
                                        Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local :
                                                                                                                                                                        "Organization of the ORF241/257 marinus SS120.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MEDLINE-21178821; PubMed=11283349; Frankenberg N., Mukougawa K., Kohchi T., Lagarias J.C.; Frankenberg N., Mukougawa K., Kohchi T., Lagarias J.C.; "Functional genomic analysis of the HY2 family of ferredoxin-dependent bilin reductases from oxygenic photosynthetic organisms."; Plant Cell 13:965-978(2001).

EMBL; AY030300; AAK38141.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PEBA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            01-DEC-2001 (TrEMBLrel. 19, Created)
01-DEC-2001 (TrEMBLrel. 19, Last sequence update)
01-DEC-2001 (TrEMBLrel. 19, Last annotation update)
Putative 15,16-dihydrobiliverdin:ferredoxin oxidoreductase
                                                                                                             Hypothetical protein.
SEQUENCE 241 AA; 1
                                                                                                                                               Submitted (JUN-2000) to the EMBL/GenBank/DDBJ EMBL; AJ278499; CAB95700.1; -.
                                                                                                                                                                                                                                          STRAIN-SS120;
                                                                                                                                                                                                                                                         SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                             Prochlorococcus.
NCBI_TaxID=1219;
                                                                                                                                                                                                                                                                                                                                Bacteria; Cyanobacteria;
                                                                                                                                                                                                                                                                                                                                                     Prochlorococcus marinus
                                                                                                                                                                                                                                                                                                                                                                    Hypothetical 28.7 kDa protein.
                                                                                                                                                                                                                                                                                                                                                                                          01-OCT-2000 (TrEMBLrel. 01-OCT-2000 (TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Bacteria; Cyanobacteria; Prochlorococcus.
                                                                                                                                                                                                                                                                                                                                                                                                                                01-OCT-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                   Q9K4U6;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Q9K4U6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NCBI_TaxID=59919;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Prochlorococcus sp. (strain CCMP 1378 / MED4).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               278
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  172 ---LTINKLHQNNQFLDLEQIKNN---QIDYDKYSAEKDPADKLFKTFFGETWTENFINN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           115
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    108
   98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              58
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           50
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                57;
                                                       Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Similarity
KIRLLRSMAIENETMQVFDFAGFMEPEY--DTPIFCAN--FFTSTNVNIVVLDLNPLHQL 153
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FLF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FLF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     WLEMTI----QVREEMEPSHVRANCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLRD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SYKEFAESALEETRKRIVLEPSHLQ--EKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SSLDFIKNQYSVFDNHKMKNIYDSKKYFSPWVMICRGNKLNLDRDLNN-IFCSFVSNY--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NKIMSIYHKYAETFPWGGKLTGESIKFFSPLVMWTR----FSSSKEKHKALFSAFLEYYQA 221
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 E-NETMQVFDFAGFMEPEYDTPIFCAN--FFTSTNVNIVVLDLNPLHQLTDQTDYQDKYY 164
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SLKNFVKTNIED-----LDGKELEISKEFKEHHNKDSKYIIKNWIFESRQYRKWRITKL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DGGDKLQVFNTVAYPNFKSEFPILGADILWFGTSQKLLAIFDYQPLIQ--
                                                                                                                                                                                                                                                                                                                                                                                        (TrEMBLrel. 15, (TrEMBLrel. 15, (TrEMBLrel. 15,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       236 AA;
                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 280
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       38141.1; -.
28368 MW;
                                                                                                             28699 MW;
                                                     7.18;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             7.8%;
23.5%;
                                                                                                                                                                                                                                                                                                                                  Prochlorophytes; Prochlorococcaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Prochlorophytes;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              53;
                                      29;
                                                                                                                                                                                                                                                                                                                                                                                        Last sequence up
                                                                                                                                                                                                                                                                                                                                                                                                                              Created)
                                                     Score 122.5;
Pred. No. 0.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 135; DB 2; Pred. No. 0.002;
                                                                                                             4569F322DC35BBFC CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       783C086599C351D3 CRC64;
                                                                                                                                                                                                 coding region
                                    Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Mismatches
                                                       .022;
                                                                                                                                                                                                                                                                                                                                                                                                         update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Prochlorococcaceae
                                                                       DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              103;
                                                                                                                                                                                                                                                                                                                                                                                      update)
                                    79;
                                                                       2;
                                                                                                                                                                   databases
                                                                                                                                                                                                     from Prochlorococcus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                    Indels
                                                                       Length
```

30;

Gaps

-EKKYLQKYC

114

57

241; 33;

Gaps

```
RESULT
OP3TNO
ID TO
ID T
                                                                                                                                                                                                                  В
                                                                                                                                                                                                                                                                 δō
                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                             δõ
                                                                                                   밁
                                                                                                                                                       Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                        Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
Best Local S
Matches 52
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE FROM N.A.

MEDLIXE=21178821; PubMed=11283349;

Frankenberg N., Mukougawa K., Kohchi T., Lagarias J.C.;

"Functional genomic analysis of the HY2 family of ferredoxin-dependent bilin reductases from oxygenic photosynthetic organisms.";

Plant Cell 13:965-978(2001).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         cyanobacterium Anabaena sp. strain DNA Res. 8:205-213(2001).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MEDIINE-21595285; PubMed-11759840;
Kaneko T., Nakamura Y., Wolk C.P., Kuritz T., Sasamoto S.,
Watanabe A., Iriyuchi M., Ishkawa A., Kawashima K., Kimura
Kishida Y., Kohara M., Matsumoto M., Matsuno A., Muraki A.,
Nakazaki N., Shimpo S., Sugimoto M., Takazawa M., Yamada M.
Yasuda M., Tabata S.;
"Complete genomic sequence of the filamentous nitrogen-fixi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Anabaena sp. (strain PCC Bacteria; Cyanobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PCYA OR ALR3707.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  01-DEC-2001 (TrEMBLrel. 19, Created)
01-DEC-2001 (TrEMBLrel. 19, Last sequence update)
01-MAR-2002 (TrEMBLrel. 20, Last annotation update)
Phycocyanobilin:ferredoxin oxidoreductase (Alr3707
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Q93TNO;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Q93TNO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Complete
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NCBI_TaxID=103690;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     11
                                                                                                   182
                                                                                                                                                                                                                         135
                                                                                                                                                                                                                                                                                    168
                                                                                                                                                                                                                                                                                                                                                                                                         109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    269
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               168
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          212
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         154
                                           281
                                                                                                                                                              224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AF339056; AAK38587.1; -. AP003594; BAB75406.1; -.
                                                                                                                                                                                                                                                                                                                                           78
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         52
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       l Similarity
52; Conser
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       proteome.
245 AA;
                  .. z
                                                                                                                                                                                                                                                                                                                                                                                                                                                           RQLADCIEEVWHQHLDLSPYHLPAELGYVEGRLEGEKLTIENRCYQTPQFRKMHLELAKV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                KEFAESALEETRKRIVLEPSHLQEKYSSMTG-LDG-KTELQMLAFKSSKIRLLR-SMAIE
                                                                                                   QVHCQGAIAASPVSAEQKQQILAGQHNYCSKQQQNDKTRRVLEKAFGVDWAENYMTTVLF
                                                                                                                                                       EMTIQVREEMEPSHVRANCE---AQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLRDFLF
                                                                                                                                                                                                                         TSLNTLNFSQPRELPEWG
                                                                                                                                                                                                                                                                          MSI----YHKYAETFPWGGKLTGESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWL
                                                                                                                                                                                                                                                                                                                                     GNMLDILHCVMFPRPEYDLPMFGCDLVGGRGQISAAIADLSPVH--LDRT-LPESYNSAL
                                                                                                                                                                                                                                                                                                                                                                                                NETMQVFDFAGFMEPEYDTPIF-CANFFTSTNVNIVVLDLNPLHQLTDQTDYQDKYYNKI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TWADQFVREFLF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AKAKELLRDFLF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FSAFLEYYQAWLEMTIQVREEME -- PSHVRANCEAQH-KYLTWRAQKDPGHGLLKRLVGE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           --EERYFCRYYKDLQILKNRFVDFNSQKTMKIYDSNKYFSPWVLLYNGSFDDLQCSLAKI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TDQTDYQDKYYNKIMSIYHKYAETFPWGGKLTGESIKFFSPLVMWTR--FSSSKEKHKAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       KLQVLNSVAY--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LDEFLHAY - - WQVDNNNSREYIKIIPSKV - - -
                                           281
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          27959 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             7.0%; Score 121.5;
21.6%; Pred. No. 0.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         233
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Nostocales; Nostocaceae; Nostoc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             7120)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       49;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ----PAYTNDKPILGIDILWFGLKRKLVAVLDFQPLVQ-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8F6CE652EFEE011A CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Mismatches
                                                                                                                                                                                                                  ---NIFSDFCIFVRPSSPEEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        filamentous nitrogen-fixing
n PCC 7120.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0.028;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           -EQLHINYDIYSAERDPAHGLFKSYFGQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DB 16;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    113;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sasamoto S.,
ima K., Kimura T.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  protein).
                                                                                                                                                                                                                  AMFLGRVREFL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 27;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                        134
                                                                                                                                                       280
                                                                                                                                                                                                                                                                                                                                                                                                   167
                                                                                                241
                                                                                                                                                                                                                  181
                                                                                                                                                                                                                                                                          223
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 77
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   268
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      211
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    10;
   RESULT
031193
ID 03
AC 03
DT 03
OT 00
OT 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT
Q93TM9
AC Q9
AC Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Matches
da Silva A.C.R., Fernandes E., Pueyo Submitted (NOV 1997) to the EMBL/GenE EMBL; AF032864, AAA86961.1; -. HSSP; P06278; 1VJS.
InterPro; IPRO00461; Alpha_amylase. Pfam; PF00128; alpha-amylase; 1. SEQUENCE. 549 AA; 62651 MW; 2CA688
                                                                                                                                                                                                                                                                                                                                     Bacillus stearothermophilus.
Bacteria; Firmicutes; Bacill
Geobacillus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    O31193;
01-JAN-1998 (TrEMBLrel.
01-JAN-1998 (TrEMBLrel.
01-JUN-2001 (TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             031193
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               bilin reductases from oxygenic photosynthetic Plant Cell 13:965-978 (2001).
EMBL; AF399057; AR438588.1; -
SEQUENCE 245 AA; 28061 MW; 20B9A8984F9C640
                                                                                                                                                                                                               SEQUENCE FROM N.A. STRAIN-ATCC 31195;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Frankenberg N., Mukougawa K., Kohchi T., Lagarias J.C.; Frankenberg N., Mukougawa K., Kohchi T., Lagarias J.C.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Phycocyanobilin:ferredoxin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     01-DEC-2001
01-DEC-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Q93TM9
                                                                                                                                                                                                                                                                                                                                                                                                                                                           Alpha amylase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Bacteria; Cyanobacteria;
NCBI_TaxID=63737;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Nostoc punctiforme
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   01-DEC-2001
                                                                                                                                                                                                                                                                                                      NCBI_TaxID=1422;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE FROM N.A.
MEDLINE=21178821; PubMed=11283349;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         278
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       135
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               168
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        52
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          78
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  51;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        KEFAESALEETRKRIVLEPSHLQEKYSSMTG-LDG-KTELQMLAFKSSKIRLLR-SMAIE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                U
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               VLFD 242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FLFN 281
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CMQAIASHPVSVEQ----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      -- QAWLEMTIQVREEMEPSHVRANCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLRD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GNMLDILHCVMFPRPQYNLPMFGCDLVGGRGQISAAIADLSPI-QL--ERTLPESYTTAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NETMQVFDFAGFMEPEYDTPIF-CANFFTSTNVNIVVLDLNPLHQLTDQTDYQDKYYNKI 167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MSI----YHKYAETFPWGGKLTGESIKFFSPLVMWTRFSSSKEKHKALFSA----FLEYY 219
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RQLADCIEAAWHQHLDLSPYHLPDELGYVEGRLEGEKLTIENRCYQTPQFRKMHLELANI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AQLPVLNFSQPRELPEWG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        6.4%;
                                                                                                                                                                                                                                                                                                                                                              Bacillus/Clostridium group; Bacillales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       05,
05,
17,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        19,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 19,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Nostocales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         50;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            oxidoreductase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Last sequence up
                                                                                                                                                       EMBL/GenBank/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Last sequence update)
Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 109.5;.
Pred. No. 0.2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 -VTQNLAGQHNYCTKQQQNDKTRRVLEKAFGPVWAENYMTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRT;
                                                                                                                                                                                Pueyo
      2CA689EDACC4D262 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     20B9A8984F9C64C4 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Mismatches
                                                                                                                                                                                3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                549
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Nostocaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              245
                                                                                                                                                                                      .
:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           . 28;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DB 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               110;
                                                                                                                                                       databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         organisms.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Nostoc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    -EAMFLSRVREFLDIH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               33;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
```

134

```
RESULT
POPKAYS
AC Q9KAYS
A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ф
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        οy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        D Q
                                                                                                      QΥ
                                                                                                                                                          밁
                                                                                                                                                                                                    δÃ
                                                                                                                                                                                                                                                  Вþ
                                                                                                                                                                                                                                                                                            Qy
                   γQ
                                                               В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ol-MAR-2000 (TrEMBLrel. 15, 01-MAR-2002 (TrEMBLrel. 20, 1) Alpha-amylase (EC 3.2.1.1). Bacillus stearothermophilus. Bacteria, Firmicutes; Bacillus Geobacillus.
                                                                                                                                                                                                                                                                                                                                                       Matches
                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Q9KWY6;
01-OCT-2000 (TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Q9KWY6
                                                                                                                                                                                                                                                                                                                                                                                                                                          PRINTS; PR00110; ALPHAAMYLASE.
Glycosidase; Hydrolase.
SEQUENCE 549 AA; 62582 MW; 8DA3E66DF9120BCE CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Submitted (JUN-1998) to the EMBL/GenBank/DDBJ EMBL; Y17557; CAB93517.1; -- HSSP; P06278; 1VJS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            InterPro; IPR000461; Alpha_amylase. Pfam; PF00128; alpha-amylase; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               STRAIN-US100;
Bejar S.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NCBI_TaxID=1422;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        327
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   273
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              229
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        489
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    281
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   429
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          184
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     50
                                                                                                                                                                                                                                                       229
                                                                    327
                                                                                                                                                            273
                      184
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      69;
                                                                                                                                                                                                                                                                                                      50
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SYKEFAESALEETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMÅIEN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NYDYLMYADLDMDHPEVVTELKNWGKWYVNTTNIDG----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ETMQVF-DFAGFMEPEYDTPIFCA-----NFFTSTNVNIVVLDLNPLHQLTDQ 156
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NRSDTVTINS--DGWGEFKVNGGSVSVWVPRKTTVSTIARPITTRPW--TGEFV 538
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LTGESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRANCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ----NKFYTASKSGGAFDMRTLMTNTLMKDQPTLAVTFVDNHDTEPGQALQSWVDPW---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   IKFSFFPDWLSYVRSQTGKPLFTVGEYWSYDINKLHNYITKTNGTMSLFDA-PLH----
LTGESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRANCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NGVDELGTKTFIDYFPEYQTEDGTVS-----DKRSIIGKSYETRPWDLTGQFI 328
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AYGTQHDYLDHSDIIGWTREGVTEKPGSGLAALITDGPGGSKWMYVGKQHAGKVFYDLTG
                                                                                                                                                                                                                                                     NYDYLMYADLDMDHPEVVTELKNWGKWYVNTTNIDG------FRLDAVKH
                                                                                                                                                       IKFSFFPDWLSYVRSQTGKPLFTVGEYWSYDINKLHNYITKTNGTMSLFDA-PLH-----
                                                                                                                                                                                                           ETMQVF-DFAGFMEPEYDTPIFCA----
                                                                                                                                                                                                                                                                                                      SYKEFAESALEETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIEN
                                                                  ----NKFYTASKSGGAFDMRTLMTNTLMKDQPTLAVTFVDNHDTEPGQALQSWVDPW---
                                                                                                                TDYQDKYY----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ----FKPLA-YAFILTROEGYPCVF--YGDYYGIPQYNIPSLKSKIDPLLIARRDY
                                                                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               -QHKYLT-----WRAQ---KDPGHGLLKRL-----VGEAKAKELLRDFLF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            19.5%;
                                                                                                                                                                                                                                                                                                                                                                        6.2%;
19.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Bacillus/Clostridium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        50;
                                                                                                                                                                                                                                                                                                                                                  ; Score 106.5;
; Pred. No. 1.5;
50; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Last sequence update)
Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ----NKIMSIYHKYAETF----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Score 109.5; D
Pred. No. 0.82;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Mismatches
                                                                                                                   NKIMSIYHKYAETF----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             549
                                                                                                                                                                                                             -----NFFTSTNVNIVVLDLNPLHQLTDQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  BB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           group; Bacillales;
                                                                                                                                                                                                                                                                                                                                                                                                     DB 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           116;
                                                                                                                                                                                                                                                                                                                                                         116;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ----FRLDAVKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels 119;
                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                     Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       549;
                                                                                                                                                                                                                                                                                                                                                         119;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ---- PWGGK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                     PWGGK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   428
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     272
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                379
                                                                                                                                                                                                                  156
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           17;
                             243
                                                                           379
                                                                                                                     183
                                                                                                                                                                    326
                                                                                                                                                                                                                                                                 272
                                                                                                                                                                                                                                                                                                             109
                                                                                                                                                                                                                                                                                                                                                           17;
```

d

Search completed: Job time: 47 secs

June 24,

2003,

18:38:58

```
Ωy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Db
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                        밁
                                                                                                             В
                                                                                                                                       80
                                                                                                                                                                     Вþ
                                                                                                                                                                                            QΥ
                          δÃ
                                                                                 Q
                                                                                                                                                                                                                           Query Match
Best Local S
Matches 50
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          01-NOV-1996
01-NOV-1996
01-MAR-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Synechocystis sp. (strain PCC 6803).
Bacteria; Cyanobacteria; Chroococcal
NCBI_TaxID=1148;
                                                                                                                                                                                                                                                                                                                        "Sequence analysis of the genome of the unicellular cyanobacterium Synechocystis sp. strain PCC6803. II. Sequence determination of the entire genome and assignment of potential protein-coding regions."; DNA Res. 3:109-136(1996).
                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE FROM N.A.

MEDLINE=97061201; PubMed=8905231;

Kaneko T., Sato S., Kotani H., Tanaka A., Asamizu E., N

Kaneko T., Sato S., Kotani H., Tanaka A., Asamoto S., Kimu

Miya)ima N., Hirosawa M., Sugiura M., Sasamoto S., Kimu

Hosouchi T., Matsuno A., Muraki A., Nakazaki N., Naruo

Shimpo S., Takeuchi C., Wada T., Watanabe A., Yamada M.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              "Sequence analysis of the genome of the unicellular cy
Synechocystis sp. strain PCC6803. I. Sequence features
region from map positions 64% to 92% of the genome.";
DNA Res. 2:153-166(1995).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MEDLINE-96127529; PubMed-8590279;
Kaneko T., Tanaka A., Sato S., Ko
Sugiura M., Tabata S.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SLR0116
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Hypothetical
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Q55891
                                                                                                                                                                                                                                                                                  EMBL; D64004; BAA10653.1; -.
Hypothetical protein; Complete
SEQUENCE 248 AA; 28129 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  281
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             429
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    380
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         489
    193
                             228
                                                         142
                                                                                                                87
                                                                                                                                                                        27
                                                                                                                                                                                                 58
                                                                                                                                                                                                                              50;
                                                                                                                                                                                                                                            Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A---QHKYLT-----WRAQ---KDPGHGLLKRL-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 -----FKPLA-YAFILTRQEGYPGVF--YGDYYGIPQYNIPSLKSKIDPLLIARRDY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NRSDTYTITS--DGWGEFKVNGGSVSVWVPRKTTVSTITRPITTRPW--TGEFV 538
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NGVDELGTKTFIDYFPEYQTEDGTVS-----DKRSIIGKSYETRPWDLTGQFI 328
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AYGTQHDYLDHSDIIGWTREGVTEKPGSGLAALITDGPGGSKWMYYGKQHAGKVFYDLTG
AIAASWQSLPLKPYQLPEDLGYVEGRLEGEKLVIENRCYQTPQFRKMHLELAKVGKGLDI
                                                                                                                                                                                               ALEETRKRIVLEPSHLQEKYSSMTG-LDG-KTELQMLAFKSSKIRLLR-SMAIENETMQV
                                                        QPEFEQQRELPPWG------EIFSEYCLFIRPSNVTEEER-FVQRVVDFLQIHCHQSI
                                                                                  --IYHKYAETFPWGGKLTGESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTI
                                                                                                              LHCVMFPEPLYGLPLFGCDIVAGPGGVSAAIADLSP----TQSDRQLPAAYQKSLAELG
                                                                                                                                         FDFAGFMEPEYDTPIF-CANFFTSTNVNIVVLDLNPLHQLTDQTDYQ-DKYYNKIMS---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (TrEMBLrel. 01, Created)
(TrEMBLrel. 01, Last sequence update)
(TrEMBLrel. 20, Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PRELIMINARY;
                                                                                                                                                                                                                             Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               protein slr0116.
                                                                                                                                                                                                                                            6.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Chroococcales;
                                                                                                                                                                                                                                49;
                                                                                                                                                                                                                                            Score 105.5; D
Pred. No. 0.61;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Kotani H.,
                                                                                                                                                                                                                                                                                     proteome.
BEB10CEBCE5E515B CRC64;
                                                                                                                                                                                                                                Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        248
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Synechocystis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sazuka T.,
                                                                                                                                                                                                                                                            DB 16;
                                                                                                                                                                                                                                 110;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             features
                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                                                                                                                                                                              Kimura T.,
                                                                                                                                                                                                                                                          Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             cyanobacterium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Miyajima
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               - VGEAKAKELLRDFLF
                                                                                                                                                                                                                                                                                                                                                                                                                                           Nakamura Y.,
                                                                                                                                                                                                                                                                                                                                                                                                                 ×.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                in the 1
                                                                                                                                                                                                                                                               248;
                                                                                                                                                                                                                                                                                                                                                                                                                 Okumura
                                                                                                                                                                                                                                   25;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ₹
                                   281
        245
                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                        114
                                                                                                                                                  169
                                                                                                                                                                            86
                                                                192
                                                                                           227
```

```
Result
No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Title: '
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Post-processing: Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Maximum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Word size :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         OM protein - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                    score greater than or equal to the score of the result well and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                 Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DB DB
                                                                                                                                                                                                                                                                                                                     Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 seq length: 0 seq length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query
Match
                                                                                                                                                                                                                                                                                                                                                                                                          is the number of results predicted by chance to have a ster than or equal to the score of the result being printed,
                                              OLIGO Gapop 60.0 , Gapext 60.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               417779 seqs, 108206813 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-09-870-406A-33
329
1 MALSMEFGFSTGSCFKAPNP...
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         June 24, 2003, 18:55:46; Search time 21 Seconds
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Published_Applications_AA: *
                                                                                                                                                                                                                                                                                                                                                                                                                                                        /cgn2_6/ptodata/2/pubpaa/US08_NEW_PUB.pep:*
/cgn2_6/ptodata/2/pubpaa/US06_NEW_PUB.pep:*
/cgn2_6/ptodata/2/pubpaa/US06_NEW_PUB.pep:*
/cgn2_6/ptodata/2/pubpaa/US06_PUBCOMB.pep:*
/cgn2_6/ptodata/2/pubpaa/US07_NEW_PUB.pep:*
/cgn2_6/ptodata/2/pubpaa/US07_NEW_PUB.pep:*
/cgn2_6/ptodata/2/pubpaa/US07_NEW_PUB.pep:*
/cgn2_6/ptodata/2/pubpaa/US08_PUBCOMB.pep:*
/cgn2_6/ptodata/2/pubpaa/US08_PUBCOMB.pep:*
/cgn2_6/ptodata/2/pubpaa/US09_PUBCOMB.pep:*
/cgn2_6/ptodata/2/pubpaa/US09_PUBCOMB.pep:*
/cgn2_6/ptodata/2/pubpaa/US09_PUBCOMB.pep:*
/cgn2_6/ptodata/2/pubpaa/US09_PUBCOMB.pep:*
/cgn2_6/ptodata/2/pubpaa/US09_PUBCOMB.pep:*
/cgn2_6/ptodata/2/pubpaa/US09_PUBCOMB.pep:*
/cgn2_6/ptodata/2/pubpaa/US09_PUBCOMB.pep:*
/cgn2_6/ptodata/2/pubpaa/US00_PUBCOMB.pep:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GenCore version 5.1.6 Copyright (c) 1993 - 2003 Compugen Ltd.
329
329
329
46
66
100
100
258
350
360
360
360
398
472
398
                                                                                                                                                                                                                                                                                                                     DΒ
                                                                                           9 9 9 10
                                                                                                                                                                        9
         9 US-10-159-901-33

9 US-10-159-901-34

9 US-10-159-901-55

9 US-09-870-406A-33

9 US-09-870-406A-34

9 US-09-870-406A-35

10 US-09-864-761-42825

9 US-10-124-903-18

10 US-09-764-853-468

10 US-09-764-853-468

10 US-09-766-658-31

9 US-09-738-626-5668

10 US-09-925-299-861

10 US-09-925-299-861

10 US-09-815-242-11793

10 US-09-815-242-10824
                                                                                                                                                                                                                                                                                                                                                                  SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (without alignments)
1695.240 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SIIGKSYETRPWDLTGQFIG 329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  417779
        Sequence 33, Appl
Sequence 55, Appl
Sequence 55, Appl
Sequence 55, Appl
Sequence 55, Appl
Sequence 18, Appl
Sequence 18, Appl
Sequence 1, Appl
Sequence 1, Appl
Sequence 5668, Ap
Sequence 567, Ap
Sequence 5377, Ap
Sequence 17793, A
Sequence 29, Appl
Sequence 29, Appl
Sequence 29, Appl
Sequence 29, Appl
                                                                                                                                                                                                                                                                                                                Description
```

45	44	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20
on 0	<b>5</b> 1 07	o o	σ	6	6	6	σ	6	σ	6	0	6	6	σ	7	7	7	7	7	7	7	7	7	7
1.8	- i	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
51	4.9	47	46	37	36	36	30	21	19	18	18	13	8	&	1661	940	830	830	830	830	663	574	478	473
10	و د	9	9	10	10	10	10	10	10	10	10	ဖ	9	9	<b>છ</b>	9	9	9	9	9	10	9	10	10
US-09-864-761-42474	US-10-230-335-11	us-10-230-318-13	US-10-050-704-298	US-09-864-761-42368	US-09-864-761-38362	US-09-864-761-36721	US-09-864-761-35754	US-09-853-830-85	US-09-864-761-46763	US-09-864-761-41204	US-09-864-761-41176	US-10-118-079-26	US-09-876-904A-367	US-09-876-904A-349	US-09-842-758-42	US-09-811-088-11	US-10-211-962-38	US-10-211-962-37	US-10-211-962-36	US-10-211-962-31	US-09-741-669-444	US-09-374-046A-62	US-09-815-242-11835	US-09-790-264-39
Sequence 42474, A	Sequence 11, Appl	13,		Sequence 42368, A	Sequence 38362, A		Sequence 35754, A			Sequence 41204, A	Sequence 41176, A		367,	349,	42,	11,	38,	•	36,	Sequence 31, Appl	Sequence 444, App	Sequence 62, Appl	1183	Sequence 39, Appl

## ALIGNMENTS

Qy	Db Qy	Qу Db	Qу Db	Query Match Best Local Matches 32	RESULT 1  US-10-159-901-33  Sequence 33, A  Publication No  GENERAL INFORM  APPLICANT: LA  APPLICANT: F  APPLICANT: APPLICA  CURRENT FILING  CURRENT FILING  PRIOR APPLICA  PRIOR APPLICA  NUMBER OF SEQ  NUMBER OF SEQ  SOFTWARE: PAT  SEQ ID NO 33  LENGTH: 329  TYPE: PAT  ORGANISM: Ar  ORGANISM: Ar
181 GGKLTGESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRA 240	121 MEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTDYQDKYYNKIMSIYHKYAETFPW 180 	61 ETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIENETMQVFDFAGF 120 	1 MALSMEFGFSIGSCFKAPNPPVLISASPNKINFTLRRRKKRFLLRVSAVSYKEFAESALE 60 	Query Match 100.0%; Score 329; DB 9; Length 329; Best Local Similarity 100.0%; Pred. No. 3.7e-309; Matches 329; Conservative 0; Mismatches 0; Indels 0; Gaps 0;	SULT 1 10-159-901-33 -10-159-901-33 -10-159-901-33 -10-159-901-33 -10-159-901-33 -10-159-901-33 -10-159-901-33 -10-159-901-33 -10-159-901-33 -10-159-901-33 -10-159-901-33 -10-159-901-33 -10-159-901-33 -10-159-901-33 -10-159-901-33 -10-159-901-33

GENERAL INFORMATION

lication No

Application US/10159901 No. US20030073235A1

10-159-901-34

δÔ

Дb Qγ

```
RESULT 3
US-10-159-901-55
Sequence 55, Application No. US200
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                   Ş
                                                                                               APPLICANT: LAGARIAS, JOHN
APPLICANT: KOICHI, TAKAYUKI
APPLICANT: FRANKENBERG, NICOLE
APPLICANT: GAMBETTA, GREGORY
                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                  Ŷ
                                                                                                                                                                                                                                                                                                                                                            B
                                                                                                                                                                                                                                                                                                                                                                                 Ş
                                                                                                                                                                                                                                                                                                                                                                                                           DЪ
                                                                                                                                                                                                                                                                                                                                                                                                                                  Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                          В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               γQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ;
US-10-159-901-34
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SOFTWARE: PatentIn version 3.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRIOR APPLICATION NUMBER: 60/294,463
NUMBER OF SEQ ID NOS: 57
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICAMP, MONTGOLER, BERONDA
TITLE OF INVENTION.ELF, BERONDA
FILE REFERENCE: 407T-907731GS
CURRENT APPLICATION NUMBER: US/10/159,901
CURRENT FILING DATE: 2002-05-29
CURRENT FILING DATE: 2002-05-29
CURRENT FILING DATE: 2002-05-29
                                                                                                                                                                                                                       301 EDGTVSDKRSIIGKSYETREWDLTGOFIG 329
                                                                                                                                                                                                                                    301 EDGTVSDKRSIIGKSVETRPWDLTGOPIG 329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT: LAGARIAS, JOHN
APPLICANT: KOICHI, TAKAYUKI
APPLICANT: FRANKENBERG, NICOLE
GAMBETTA, GREGORY
                                                                                                                                                                                                                                            241 NCEAQHKYLTWRAOKDPGHGLLKRLVGEAKAKELLRDFLFNGVDELGTKTFIDYFPEYOT 300
                                                                                                                                                                                                                                                           241 NCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLRDPLFNGVDELGTKTEIDYFPEYQT 300
                                                                                                                                                                                                                                                                                             101 GGKLTGESIKFFFSDLVMWTRFSSSKEKHKALFSAFLEYYQAWLEWTIQVREEMEPSHVRA 240
                                                                                                                                                                                                                                                                                                           181 GGKLTGESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRA 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Match
Local Similarity 100.0%; Score 329; DB 9; Length 329;
les 329; Conservative 0; Mismatches 0; Indels 0; Gaps
                                                                                                                                                                                                                                                                                                                                         121. MEPETOTPIKĆANFETSTNVNIVVLDLNPLHQLTDQTDYQDKYYNKIMSIYHKYAETEPW 180
                                                                                                                                                                                                                                                                                                                                                          121 MEDEYDTPIECANFFTSTNVNIVVLDLNPLHQLTDQTDYQDKYYNKIMSIYHKYAETFPW 180
                                                                                                                                                                                                                                                                                                                                                                                          61 ETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIENETMQVFDFAGF 120
61 ETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIENETMQVFDFAGF 120
                                                                                                                                                          Application US/10159901
NO. US20030073235A1
                                                                                                                                                                                                                                                                                                                                                                                                                                          1 MALSMEFGFSIGSGFKAPNPPVLISASPNKINFTLRRRKKRFLLRVSAVSYKEFAESALE 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                        1 MALSMEPGESIGSCEKAPNPPVLISASPNKINFTLRRRKKRFLLRVSAVSYKEFAESALE 60
                                                                                                                               APPLICANT: NOW YOUR TO THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF BILIN REDUCTASES CURRENT APPLICATION NUMBER: US/09/870,406A

PRIOR APPLICATION NUMBER: US/09/870,406A

PRIOR PILING DATE: 2002-09-04

PRIOR PILING DATE: 2001-02-26

PRIOR APPLICATION NUMBER: 60/271,758

PRIOR APPLICATION NUMBER: 60/210,286

NUMBER FILING DATE: 2000-06-08

NUMBER OF SEQ ID NOS: 57
                                                                           ORGANISM: Arabidopsis thaliana
Query Match
Best Local Similarity 100.0%; Score 329; DB 9; Length 329;
Matches 329; Conservative 0; Mismatches 0, Indels (
                                                                                                                                       SOFTWARE: Pa
                                                                                                                                                                                                                                                              Sequence 33, Application US/09870406A
GENERAL INFORMATION: US20030104379A1
APPLICANT: LARARIAS, JOHN
APPLICANT: KOICHI, TAKAYUKI
APPLICANT: GAMBETTA, GREGORY
APPLICANT: GAMBETTA, GREGORY
                                                                                                                                                                                                                                                                                                                                                       RESULT 4
US-09-870-406A-33
; Sequence 33, App
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  δĀ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ъ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT: MONTGOMERY, BERONDA
FILE REFERENCE: 407T-907731US
CURRENT APPLICATION NUMBER: US/10/159,901
PRIOR APPLICATION NUMBER: US/10/159,901
PRIOR APPLICATION NUMBER: 05/10/159,901
PRIOR RILING DATE: 2002-05-29
NUMBER: 05/10/165-294,463
SOFTWARE: PATE IN ONE SEQ ID NOS: 57
SEQ ID NO 55 etentin version 3.0
TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Д
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               QV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             .
.
. ORGANISM: Arapidopsis thaliana
                                                                                                                   PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local Similarity
                                                                                                                             329
                                                                                                                                                                                                                                                                                                                                                                                        301 EDGTVSDKRSIIGKSYETREWDLTGOFIG 329
                                                                                                                                                                                                                                                                                                                                                                                                        301 EDGTVSDKRSIIGKSVETRPWDLTGOFIG 329
                                                                                                                                                                                                                                                                                                                                                                                                                241 NCEAQHKYLTWRAOKDPGHĞLİKRLVGEAKAKEİLEDFLFNĞVDELĞTKTFIDYFPEYQT 300
                                                                                                                                                                                                                                                                                                                                                                                                                               241 NCEACHKYLTWRAOKDPGHGLLKRLVGEAKAKELLRDFLENGVDELGTKTFIDYFPEYOT 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                181 GGKLTGESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEWTIGVREEMEPSHVRA 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               181 GGKLTGESIKFESDLVMWTRFSSSKEKHKALESAFLEYYQAWLEMTIQVREEMEPSHVRA 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               121 MEPEYDTÞÍFCANFETSTNVNÍÍVVLDLNÞLHÓLTDÓTDYODKYÝNKÍMSIYHKYÁETFÞW 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             121 MEDEYDTPIFCANEFTSTNYNIYVLDLNPLHOLTDOTDYODKYYNKIMSIYHKYAETEPW 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              61 ETRKRIVLEPSHLQEKYSSWTGLDGKTELOMLAFKSSKIRLLRSWAIENEIMQVFDPAGF 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            61 ETRKRIVLEPSHLOEKYSSMTGLDGKTELOMLAFKSSKIRLLRSMAIENETMOVFDFAGF 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1 MALSMERGESIGSCEKAPNPPVLISASPNKINFTLRRRKKRFLLRVSAVSYKEFAESALE 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              329;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1 MALSMEFGFSIGSCFKAPNPPVLISASPNKINPTLRRKKRFLLRVSAVSYKEFABSALE 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              "Allarity 100.0%; Score 329; DB 9; L
Conservative 0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 329;
```

,

Gaps

,

```
CURRENT APPLICATION NUMBER: US/09/870,406A
CURRENT FILING DATE: 2002-09-04
PRIOR APPLICATION NUMBER: 60/271,758
PRIOR FILING DATE: 2001-02-26
PRIOR APPLICATION NUMBER: 60/210,286
PRIOR FILING DATE: 2000-06-08
NUMBER OF SEQ ID NOS: 57
SOFTWARE: Patentin version 3.0
SEQ ID NO 34
LENGTH: 329
LENGTH: 329
TYPE: PRT
             Š
                                            뭐
                                                                       20
                                                                                                     밁
                                                                                                                                   Š
                                                                                                                                                                         밁
                                                                                                                                                                                               δÃ
                                                                                                                                                                                                                                     В
                                                                                                                                                                                                                                                                  δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           망
                                                                                                                                                                                                                                                                                                                                                                    ; ORGANISM: Arapidopsis thaliana US-09-870-406A-34
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-09-870-406A-34
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 34, Application US/09870406A Publication No. US20030104379A1 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                     Query Match
Best Local
                                                                                                                                                                                                                                                                                                      Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT: GAMBETTA, GREGORY
APPLICANT: MONTGOMERY, BERONDA
TITLE OF INVENTION: HY2 FAMILY OF BILIN REDUCTASES
FILE REFERENCE: 4077-907720US
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT: LAGARIAS, JOHN
APPLICANT: KOICHI, TAKAYUKI
APPLICANT: FRANKENBERG, NICOLE
APPLICANT: GAMBETTA, GREGORY
              241
                                              181
                                                                            181
                                                                                                            121
                                                                                                                                          121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               121
                                                                                                                                                                         61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                181
                                                                                                                                                                                                         61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             61
                                                                                                                                                                                                                                                                                                                h 100.0%; Score 329; DB 9; 1
Similarity 100.0%; Pred. No. 3.7e-309;
                                                                                                                      MEPEYDTPIFCANFFTSTNVNIVYLDLNPLHQLTDQTDYQDKYYNKIMSIYHKYAETFPW
                                                                                                                                                                   MALSMEFGFSIGSCFKAPNPPVLISASPNKINFTLRRRKKRFLLRVSAVSYKEFAESALE
                                                        GGKLTGESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRA
                                                                                                       MEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTDYQDKYYNKIMSIYHKYAETFPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIENETMQVFDFAGF 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MALSMEFGFSIGSCFKAPNPPVLISASPNKINFTLRRKKRFLLRVSAVSYKEFAESALE
        NCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLRDFLFNGVDELGTKTFIDYFPEYQT
                                         GGKLTGESIKFFSPLYMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLRDFLFNGVDELGTKTFIDYFPBYQT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GGKLTGESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      EDGTVSDKRSIIGKSYETRPWDLTGQFIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EDGTVSDKRSIIGKSYETRPWDLTGQFIG 329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GGKLTGESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHYRA 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NCEAQHKYLTWRAQKDPGHGLLKRLYGEAKAKELLRDFLFNGVDELGTKTFIDYFPEYQT
                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                     0;
                                                                                                                                                                                                                                                                                                     Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      329
                                                                                                                                                                                                                                                                                                   0,
                                                                                                                                                                                                                                                                                                                               Length 329;
                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                                                 0;
                                                                                                                                                                                                                                                                                                 Gaps
                                                                       240
                                                                                                       180
                                                                                                                                      180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 300
         300
                                         240
                                                                                                                                                                                                                                     60
                                                                                                                                                                                                                                                                  60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           60
                                                                                                                                                                                                                                                                                                 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT: KOICHI, TAKAYUKI
APPLICANT: KOICHI, TAKAYUKI
APPLICANT: KOICHI, TAKAYUKI
APPLICANT: FRANKENBERG, NICOLE
APPLICANT: FRANKENBERG, NICOLE
APPLICANT: MONTGOMERY, BERONDA
TITLE OF INVENTION: HYZ FAMILY OF BILIN REDUCTASES
FILE REFERENCE: 4071-907720US
CURRENT APPLICATION NUMBER: US/09/870,406A
CURRENT FILING DATE: 2002-09-04
PRIOR APPLICATION NUMBER: 60/211,758
PRIOR FILING DATE: 2001-02-26
PRIOR PELICATION NUMBER: 60/210,286
PRIOR FILING DATE: 2000-06-08
                                                                                                                                   RESULT 7
US-09-864-761-42825
                                                                                                                                                                                                                                  Ş
                                                                                                                                                                                                                                                                                           ρy
                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                        Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       В
                                                                                                                                                                                                                                                                  В
                                                                                                                                                                                                                                                                                                                                                                                             В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ; ORGANISM: Arapidopsis thaliana US-09-870-406A-55
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 6
US-09-870-406A-55
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Db
                                                                                    Sequence 42825, Application US/09864761 Patent No. US20020048763A1 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match 100.0%;
Best Local Similarity 100.0%;
Matches 329; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SOFTWARE: PatentIn version 3.0
SEQ ID NO 55
LENGTH: 329
TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GENERAL INFORMATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 55, Application US/09870406A Publication No. US20030104379A1
APPLICANT: Penn, Sharron G.
APPLICANT: Rank, David R.
APPLICANT: Hanzel, David K.
APPLICANT: Chen, Wensheng
TITLE OF INVENTION: HUMAN GENOME-DERIVED SINGLE EXON NUCLEIC ACID PROBES USEFUL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NUMBER OF SEQ ID NOS: 57
                                                                                                                                                                                                                                                                  241
                                                                                                                                                                                                                                                                                                                                 181
                                                                                                                                                                                                    301
                                                                                                                                                                                                                                  301
                                                                                                                                                                                                                                                                                                241
                                                                                                                                                                                                                                                                                                                                                             181
                                                                                                                                                                                                                                                                                                                                                                                             121
                                                                                                                                                                                                                                                                                                                                                                                                                             121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        301
                                                                                                                                                                                                                                                                                                                                                                                                                                                           61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1 MALSMEFGFSIGSCFKAPNPPVLISASPNKINFTLRRKKRFLLRVSAVSYKEFAESALE
                                                                                                                                                                                                 EDGTVSDKRSIIGKSYETRPWDLTGQFIG
                                                                                                                                                                                                                                                                                 NCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLLRDFLFNGVDELGTKTFIDYFPEYQT 300
                                                                                                                                                                                                                                                                                                                                                                                                          MEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTDYQDKYYNKIMSIYHKYAETFPW 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIENETMQVFDFAGF 120
                                                                                                                                                                                                                                                                                                                                              GGKLTGESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRA 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                       ETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIENETMQVFDFAGF 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MALSMEFGFSIGSCFKAPNPPVLISASPNKINFTLRRKKRFLLRVSAVSYKEFAESALE
                                                                                                                                                                                                                                                              NCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLRDFLFNGVDELGTKTFIDYFPEYQT
                                                                                                                                                                                                                                                                                                                              GGKLTGESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRA
                                                                                                                                                                                                                                                                                                                                                                                           MEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTDYQDKYYNKIMSIYHKYAETFPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EDGTVSDKRSIIGKSYETRPWDLTGQFIG 329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       EDGTVSDKRSIIGKSYETRPWDLTGQFIG 329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Score 329; DB 9;
Pred. No. 3.7e-309;
); Mismatches 0;
                                                                                                                                                                                                  329
                                                                                                                                                                                                                                  329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length 329;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                              240
                                                                                                                                                                                                                                                                                                                                                                                           180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       300
```



Ö

REFERENCE: Aeomica-X-

GENE EXPRESSION ANALYSIS BY MICROARRAY

APPLICATION NUMBER: US/09/864,761

0;

```
RESULT 8
US-10-124-903-18
                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                US-09-864-761-42825
                                                Sequence 18, Application US/10124903
Publication No. US20030037346A1
GENERAL INFORMATION:
APPLICANT: Craig, Roger
APPLICANT: Savakis, Charalambos
                                                                                                                                                                                                                                                                                                                         Query.Match
Best Local
                                                                                                                                                                                                                                                                                                       Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQ ID NO 42825
                 APPLICANT: Savakis, Charalambos TITLE OF INVENTION: PROTEIN PRODUCTION SYSTEM FILE REFERENCE: 18747/1032
                                                                                                                                                                                                                                                                                                                                                                                             OTHER INFORMATION: MAP TO AF186190.1 OTHER INFORMATION: EXPRESSED IN FETRA OTHER INFORMATION: EXPRESSED IN BRAIL OTHER INFORMATION: EXPRESSED IN BRAIL OTHER INFORMATION: EXPRESSED IN BONE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SOFTWARE: Annomax
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FILING DATE: 2000-06-30
APPLICATION NUMBER: US 09/774,203
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FILING DATE: 2001-01-30
APPLICATION NUMBER: US 60/234,687
FILING DATE: 2000-09-21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICATION NUMBER: US 60/207,456 FILING DATE: 2000-05-26
                                                                                                                                                                                                                         238 VRANCEA 244
|||||||
32 VRANCEA 38
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICATION NUMBER: US 09/608,408
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICATION NUMBER: US 09/632,366 FILING DATE: 2000-08-03
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICATION NUMBER: US 60/180,312
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICATION NUMBER: PCT/US01/00661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICATION NUMBER: PCT/US01/00662
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICATION NUMBER: PCT/US01/00663
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICATION NUMBER: PCT/US01/00665
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICATION NUMBER: PCT/US01/00669
FILING DATE: 2001-01-30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICATION NUMBER: PCT/US01/00664
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICATION NUMBER: PCT/US01/00666
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICATION NUMBER: US 60/236,359
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICATION NUMBER: GB 24263.6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICATION NUMBER: PCT/US01/00667
APPLICATION NUMBER: US/10/124,903
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PPLICATION NUMBER: PCT/US01/00668
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LING DATE: 2001-01-30
                                                                                                                                                                                                                                                                                                                         Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CATION NUMBER: PCT/US01/00670
                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence Listing Engine vers.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2001-01-30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2001-01-30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2001-01-30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2001-01-30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2001-01-30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2000-09-27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2001-01-30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2001-01-30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2000-02-04
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2001-01-29
                                                                                                                                                                                                                                                                                                                       2.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2001-05
                                                                                                                                                                                                                                                                                                     0
                                                                                                                                                                                                                                                                                                                       Score 7;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                               FETAL LIVER, SIGNAL = ADULT LIVER, SIGNAL = 0.99
                                                                                                                                                                                                                                                                                                                                                                                                   BONE
                                                                                                                                                                                                                                                                                                   Mismatches
                                                                                                                                                                                                                                                                                                                                                                                               MARROW,
                                                                                                                                                                                                                                                                                                                         DB 10;
D. 23;
                                                                                                                                                                                                                                                                                                                                                                                               SIGNAL
                                                                                                                                                                                                                                                                                                   0;
                                                                                                                                                                                                                                                                                                                                         Length 46
                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                   = 4.6
= 1.1
                                                                                                                                                                                                                                                                                                   0;
                                                                                                                                                                                                                                                                                                   Gaps
```

0;

```
밁
                                                                                                                                                                                                                                                                                                                                                                                                Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
Best Local Similarity
"-+-hes 7; Conserve
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ; TYPE: PRT; ORGANISM: camel US-10-124-903-18
; TYPE: PRT
; ORGANISM: Pseudomonas sp. KS-E1806
US-10-156-055A-1
                                                                                                                                                                                                                                                                                                 US-10-156-055A-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ; ORGANISM: Homo sapiens US-09-764-853-468
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                    RESULT 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-09-764-853-468
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT
                                                                                                                                                                                                                                               Sequence 1, Application US/10156055A Publication No. US20030022336A1 GENERAL INFORMATION:
                                                              SOFTWARE: PatentIn version SEQ ID NO 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SOFTWARE: PatentIn Ver. SEQ ID NO 468
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence 468, Application US/09764853 Patent No. US20020090672A1
                                                                                                                                                                                                                                                                                                                                                                                                                                    Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQ ID NO 18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CURRENT FILING DATE: 2002-04-18
PRIOR APPLICATION NUMBER: PCT/GB 00/04013
PRIOR FILING DATE: 2000-10-19
PRIOR APPLICATION NUMBER: GB 9924721.5
PRIOR FILING DATE: 1999-10-19
                                                                                                                                              CURRENT APPLICATION NUMBER: US/10/156,055A CURRENT FILING DATE: 2002-09-03
                                                                                                                                                                              TITLE OF INVENTION: A SORBITOL DEHYDROGENASE GENE, A NOVEL RECOMBIN TITLE OF INVENTION: A PROCESS FOR PRODUCING SORBITOL DEHYDROGENASE FILE REFERENCE: 4853.0091-00000
                                                                                                                PRIOR APPLICATION NUMBER: JP PRIOR FILING DATE: 2001-05-29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Prior application data removed - consult PALM or file wrapper NUMBER OF SEQ ID NOS: 939
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CURRENT FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CURRENT APPLICATION NUMBER: US/09/764,853
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICANT: Rosen et al. TITLE OF INVENTION: Nucleic Acids, Proteins, and Antibodies FILE REFERENCE: PJZ06
                                                                                               NUMBER OF SEQ ID NOS:
                                                                                                                                                                                                                                  APPLICANT: KIKKOMAN CORPORATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SOFTWARE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NUMBER OF SEQ ID NOS: 19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PRIOR FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PRIOR APPLICATION NUMBER: US 60/165,508
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LENGTH: 1
TYPE: PRT
                                                LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                   Local Similarity
nes 7; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  256 DPGHGLL 262
                                                                                                                                                                                                                                                                                                                                                                                              21 PVLISAS 27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     22 DPGHGLL
                                                258
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     100
                                                                                                                                                                                                                                                                                                                                                                    8 PVLISAS 14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       66
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PatentIn
                                                                                                                                                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     28
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      version 3.1
                                                                                                                  2001-05-29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1999-11-15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2001-01
                                                                                                                                                                                                                                                                                                                                                                                                                                                  2.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2.1%;
                                                                                                                                2001-159870
                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 7; Dr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score 7; Dr
                                                                                                                                                                                                                                                                                                                                                                                                                                    0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                    Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                  DB 10;
5.46;
                                                                                                                                                                                                                                                                                                                                                                                                                                    0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length 66
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 100
                                                                                                                                                                                                                 A NOVEL RECOMBINANT DNA, AND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                    0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
```

0;

```
US-09-925-299-861
                                                                                                                                                                                                                                                                                                                                                                                                     뮹.
                                                                                                                                                                                                                                                                                                                                                                                                                               δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-09-738-626-5668
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-09-738-626-5668
                                                                                                                                                                                                                                                                              Publication No. US20 GENERAL INFORMATION:
                                                                       SEQ ID NO 861
                                                                                                                                                                                                                                                                                                               Sequence 861,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
                                                                                   PRIOR APPLICATION NUMBER: PCT/US00/05883
PRIOR FILING DATE: 2000-03-08
PRIOR APPLICATION NUMBER: 60/124,270
PRIOR FILING DATE: 1999-03-12
NUMBER OF SEQ ID NOS: 1556
SOFTWARE: Patentin Ver. 2.0
                                                                                                                                                                                        APPLICANT: Rosen et al.
TITLE OF INVENTION: Nucleic Acids, Proteins
FILE REFERENCE: PA102
CURRENT APPLICATION NUMBER: US/09/925,299
CURRENT FILING DATE: 2001-08-10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 5668, Application US/09738626 Publication No. US20020197605A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT:
APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EQ ID NO 5668
LENGTH: 341
TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PRIOR APPLICATION NUMBER: JP 00/280988 PRIOR FILING DATE: '2000-08-03 NUMBER OF SEQ ID NOS: 7059
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PRIOR APPLICATION NUMBER: JP 99/377484
PRIOR FILING DATE: 1999-12-16
PRIOR APPLICATION NUMBER: JP 00/159162
PRIOR FILING DATE: 2000-04-07
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SOFTWARE: Patentin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CURRENT APPLICATION NUMBER: US/09/738,626
CURRENT FILING DATE: 2000-12-18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT: NAKAGAWA, SATOSHI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ORGANISM: Corynebacterium glutamicum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PPLICANT:
                 ORGANISM: Homo sapiens
       EATURE:
                                                   ENGTH: 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 E REFERENCE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LE OF INVENTION: NOVEL POLYNUCLEOTIDES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Poca T
                                                                                                                                                                                                                                                                                                                                                                                                   305 FNGVDEL 311
                                                                                                                                                                                                                                                                                                                                                                                                                                   280 FNGVDEL 286
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           211 KRLVGEA 217
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           263 KRLVGEA 269
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Similarity
7; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 YOKOI, HARUHIKO
TATEISHI, NAOKO
SENOH, AKIHIRO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               OZAKI, AKIO
                                                                                                                                                                                                                                                                                              Application US/09925299
o. US20030040617A9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 HAYASHI, MIKIRO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MIZOGUCHI, HIROSHI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 IKEDA, MASATO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2.1%; Score 7; 1 larity 100.0%; Pred. No. Conservative 0; Mismatc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEIKO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    KEIKO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score 7;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Pred: No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DB 9; Le
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DB 9; Le
D. 1.1e+02;
                                                                                                                                                                                                                                            and Antibodies
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 341
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 258
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-10-106-698-5377
; Sequence 5377, Application US/10106698
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ; NAME/KEY: SITE
; LOCATION: (360)
; OTHER INFORMATION:
US-09-925-299-861
                                                                                                                                                                                                                                      RESULT 14
US-09-925-299-861
                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                        Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-10-106-698-5377
                                                                                                                                 GENERAL INFORMATION:
APPLICANT: Rosen et al.
TITLE OF INVENTION: Nucleic Acids, Proteins and Antibodies
FILE REFERENCE: PA102
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SOFTWARE: PatentIn Ver.
SEQ ID NO 5377
LENGTH: 360
TYPE: PRT
                                                                                                                                                                                                      Patent No. US20020055627A1
                                                                                                                                                                                                                      Sequence 861, Application US/09925299
                                                                                                                                                                                                                                                                                                                                                                              Matches
                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Publication No. US20 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CURRENT APPLICATION NUMBER: US/10/106,698
CURRENT FILING DATE: 2002-03-27
PRIOR APPLICATION NUMBER: PCT/US00/26524
PRIOR FILING DATE: 2000-09-28
PRIOR APPLICATION NUMBER: US 60/157,137
PRIOR FILING DATE: 1999-09-29
                                                            CURRENT APPLICATION NUMBER: US/09/925,299
CURRENT FILING DATE: 2001-08-10
PRIOR APPLICATION NUMBER: PCT/US00/05883
PRIOR FILING DATE: 2000-03-08
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PRIOR APPLICATION NUMBER: US 60/163,280 PRIOR FILING DATE: 1999-11-03 NUMBER OF SEQ ID NOS: 8564
              PRIOR FILING DATE: 1999-03
NUMBER OF SEQ ID NOS: 1556
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT: Ruben et al.
TITLE OF INVENTION: Colon and Colon Cancer Associated Polynucleotides and Polypept
                                               PRIOR APPLICATION NUMBER: 60/124,270
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FILE REFERENCE: PA005P1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NAME/KEY: MISC_FEATURE
LOCATION: (53)
LOCATION: Xaa equals any of the naturally occurring L-amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                             OTHER INFORMATION: Xaa equals any of the naturally occurring
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NAME/KEY: MISC_FEATURE LOCATION: (360)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      OTHER INFORMATION: Xaa equals any of the naturally occurring L-amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LOCATION:
                                                                                                                                                                                                                                                                                                                                                                            Local Similarity es 7; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Local
                                                                                                                                                                                                                                                                                                          268 EAKAKEL 274
||||||
183 EAKAKEL 189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  183 EAKAKEL 189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    268 EAKAKEL 274
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Similarity 7; Conserv
PatentIn Ver.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (53)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2.1%;
ilarity 100.0%;
Conservative
                                                                                                                                                                                                                                                                                                                                                                              Conservative
                                 1999-03-12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Xaa equals any of the naturally occurring
                                                                                                                                                                                                                                                                                                                                                                                             100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      3.0
                                                                                                                                                                                                                                                                                                                                                                              0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score
Pred.
                                                                                                                                                                                                                                                                                                                                                                                            Score 7; 1
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                            Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          , 7;
No.
                                                                                                                                                                                                                                                                                                                                                                                            DB 9; Le
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    . DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  9; Le .5e+02;
                                                                                                                                                                                                                                                                                                                                                                                                            Length 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length 360
                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      L-amino acids
                                                                                                                                                                                                                                                                                                                                                                          0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                               L-amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0
                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
```

0;

```
δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RAME/KEY: SITE
LOCATION: (53)
COTHER IMPORMATION: Xaa equals any of the naturally occurring L-amino acids
NAME/KEY: SITE
LOCATION: (360)
COTHER IMPORMATION: Xaa equals any of the naturally occurring L-amino acids
US-09-925-299-861
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           멍
                                                                                                                                                                                                                                 NUMBER OF SEQ ID NOS: 14110

SOFTWARE: FastSEQ for Windows Version 4.0
SEQ ID NO 11793
LENGTH: 387
TYPE: PRT
ORGANISM: Pseudomonas aeruginosa
US-09-815-242-11793
Search completed: June 24, 2003, 19:00:23 Job time: 22 secs
                                                                               Ъ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match 2...
Best Local Similarity 100
Matches 7; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence 11793, Application US/09815242 Patent No. US20020061569A1
                                                                                                                                                            Matches
                                                                                                                                                                                                 Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CURRENT APPLICATION NUMBER: US/09/815,242
CURRENT FILING DATE: 2001-03-21
PRIOR APPLICATION NUMBER: 60/191,078
PRIOR FILING DATE: 2000-03-21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT: Carr, Grant J.
APPLICANT: Yamamoto, Robert T.
APPLICANT: Xu, H. Howard
TITLE OF INVENTION: Identification of Essential Genes in
TITLE OF INVENTION: Prokaryotes
FILE REFERENCE: ELITRA.011A
                                                                                                                                                                                                                                                                                                                                                                          PRIOR APPLICATION NUMBER: 60/269,308
PRIOR FILING DATE: 2001-02-16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PPLICANT: Haselbeck, Robert
PPLICANT: Ohlsen, Kari L
PPLICANT: Zyskind, Judith W.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LENGTH: 360
TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                 OR APPLICATION NUMBER: 60/206,848
OR FILING DATE: 2000-05-23
OR APPLICATION NUMBER: 60/207,727
OR FILING DATE: 2000-05-26
OR APPLICATION NUMBER: 60/242,578
OR FILING DATE: 2000-10-23
OR APPLICATION NUMBER: 60/253,625
OR FILING DATE: 2000-11-27
OR APPLICATION NUMBER: 60/257,931
OR FILING DATE: 2000-12-22
OR FILING DATE: 2000-12-22
                                                                                                                                                        y Match 2.1%; Score 7; DB Local Similarity 100.0%; Pred. No. 1. hes 7; Conservative 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                268 EAKAKEL 274
||||||
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           183 EAKAKEL 189
                                                                               261 KEFAESA 267
                                                                                                   52 KEFAESA 58
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Wall, Daniel
Trawick, John D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 7; DB 10; L
Pred. No. 1.5e+02;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Mismatches
                                                                                                                                                      No. 1.6e+02;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 360;
                                                                                                                                                                                                 Length 387;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
                                                                                                                                                              Indels
                                                                                                                                                                0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0;
                                                                                                                                                                0;
```

```
Title:
Perfect score:
Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Database :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Minimum DB seq length: 0
Maximum DB seq length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            OM nucleic - nucleic search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         June 24, 2003, 10:44:09 ; Search time 3712 Seconds (without alignments) 16934.822 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GenEmbl:*
1: gb_ba:*
2: gb_htg:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      IDENTITY_NUC Gapop 10.0 , Gapext 1.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-09-870-406A-32
2160
                                                                                                                                                                                                                                                                                10:
11:
12:
13:
14:
15:
16:
16:
18:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2054640 seqs, 14551402878 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          gaattccccacgtcaacgtg.....tcgtctctacctaatcaaca 2160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GenCore version 5.1.6 Copyright (c) 1993 - 2003 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                             gb_om:*
gb_pat:*
gb_ph:*
gb_ph:*
gb_pl:*
gb_ro:*
gb_ro:*
gb_sts:*
gb_sy:*
gb_un:*
gb_vi:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                gb_ba:*
gb_htg:*
gb_in:*
em_htgo_hum:*
em_htgo_mus:*
em_htgo_other:*
                                                                                                                em_htg_hum:*
em_htg_inv:*
em_htg_other:*
                                                                                                                                                                                                     em_ov:*
em_pat:*
em_ph:*
em_pl:*
                                                                                                                                                     em_un:*
em_vi:*
                                                                                                                                                                                                                                                                   em_mu:*
em_om:*
                                                                                                                                                                                                                                                                                           em_hum:*
em_in:*
                                                                                                                                                                              em_ro:*
em_sts:*
                                                    em_htg_mam:*
em_htg_vrt:*
                                                                             em_htg_pln:*
em_htg_rod:*
                                                                                                                                                                                                                                                                                                                    em_fun:*
                                                                                                       em_htg_mus:*
                                                                                                                                                                                                                                                       em_or:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    4109280
```

score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

						*
C 443	c 35 40	C C 3322227		10 11 12 13 14 16 16 17	C C C C C C C C C C C C C C C C C C C	
4 4 4 4 4 4 4 4 4 • • • • •	44.8 44.8 44.8 6	444444 4555555555555555555555555555555	444444 55000000000000000000000000000000	4444 4 4 4566 7 8 64	2160 2160 6080 567.2 525.2 343 92.6 91.6 53.6	Scor
2.1 2.1 2.1	222222			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	100.0 100.0 28.1 26.3 24.3 15.9 4.3 4.3	er latc
71 18 00	31 62 70 81	43 43 43 43 43	54345 15421 17211 15224 15224 15224 15224 23046	12142 1141 188357 204782 349980 7441 7479 256774	85561 106688 1358 1377 1308 1092 85561 150053	ngt
พดพด	συυσφυ	_		συσσσυφσσ	0000000000	DB
4627 1696 4493 1607	C11698 X28128 X28129 C11691 C11696	AX345763 AX346909 AX346909 AC110484 AC015814 AC065815 AC064813 CNS07YP4	AC084152 PFCOMPIRA AX345557 AX251963 AX344355 AX3443750 LES272306 AX083744	313330103	ATAC009326 ATAC011436 AY099706 AB045112 AY088874 AY128900 ATAC009326 AP003735 I66494	
627 696 493	1698 4522 8128 8128 1691 1696	34576 34663 34690 11048 11048 01581 06661 06481	8415 275 4555 5196 4435 4875 7230	34657 08374 15999 01116 34455 34844 34844 33917 11696	32 43 70 87 90 4	Cri
000	4 Dictyc 8 Human 4 Sequer 9 Dictyc 6 Dictyc	3 Sequ 0 Sequ 9 Sequ 4 Ratt 4 Homc 5 Homc 5 Homc 7 Oryz	40000792	44000444	Arabidops Arabidops Arabidops Arabidops Arabidops Arabidops Arabidops Arabidops Arabidops Arabidops Arabidops Arabidops Arabidops Arabidops Arabidops	ion

## ALIGNMENTS

REFERENCE AUTHORS		ORGANISM	SOURCE	KEYWORDS	VERSION	ACCESSION		DEFINITION	Locus	RESULT 1 ATAC009326
1 (bases 1 to 85561) Lin, X., Kaul, S., Town, C.D., Benito, MI., Creasy, T.H., Haas, B.,	Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae; eurosida; Erassicales; Brassicaceae; Arahidopsis.	Arabidopsis thaliana	Arabidopsis thaliana.	HTG.	AC009326.8 GI:12408713	AC009326	complete sequence.	Arabidopsis thaliana chromosome III P1 M2B10 genomic sequence,	ATAC009326 85561 bp DNA linear PLN 24-JAN-2001	

Pred. No.

is the number of results predicted by chance to have a

/note="exon predic marginal_shadowexc complement(1852, /note="exon predic	misc_reature 1655. 1758 /note="exon predicted by xgrail, quality marginal" misc_feature complement(1682. 1731)	complement(15161602) /note="exon predicted by xgrail, marginal_shadowexon"	/note="exon predicted by xgrail quality	_feature 8811171 /note="exon predicted by xgrail quality:	xgrail,	349. 702 /note="exon predicted by xgrail, quality	/CILCUIDSCHIEF III. /map="CIC7A12" /Clone="Myp10"	/organism="Arabidopsis thaliana" /cultivar="Columbia" /db_xref="taxon:3702" /chommono="Tit"		Simple repeats are		at are predicte of their lengt	lficar	ñ.	complete sequence against a peptide database and the Arabidopsis EST database at TIGR (http://www.tigr.org/tdb/at/at.html).	and NetPlants	rom arthur epm ornl gov), Genefinder (Phil Green, University of Washington), Genscan (Chris Burge,	Genes were identified by a combination of three methods: Gene prediction programs including GRAIL (available by approximate from	The orientation of the sequence is from SP6 to T7 end of the P1 clone.	Pl clone MCBBLO is from Arabidopsis chromosome III and is near the molecular marker CIC7A12.	Rockville, MD 20850, USA e-mail: xlind*icr orr	The Institute for Genomic Research	s sequence ver ondence to:	AL Submitted Medical Ce	omission	Medical Center Dr, Rockville, MD 20850, USA, xlin@tigr.org	ion NUG-1999) The Institute for Ge	2 (bases 1 to 85561) Lin, X. and Kaul, S.		Ronning, C.M., Koo, H., Fujii, C.Y., Utterback, T.R., Barnstead, M.E.,
CDS join(69207010,70977253,75417646,77628769, 89699232) /gene="MXB10.3" /note="hypothetical protein" /codon_start=1	mRNA join(<69207010,70977253,75417646;77628769, 8969>9232) /qene="MZBIO.3"			repeat_region complement/66326705)	on predicted by xgrail, t(64186474)	marginal_shadowexon" misc_feature 63936476		misc_feature complement(5641. 5725) /note="exon predicted by xgrail, quality excellent" /note="bright complement for the comple	<pre>misc_feature complement(54905586) /note="exon predicted by xgrail, quality."</pre>	DNVVNJEGLICH MSKLEVILLEGLVYSCKYCOTHFAVTNDIISKSFHCKHGRAYLF DNVVNTGEKEHRVMITGWHTVADIFCVSCGSLVGWKYEIAYDKSQKYKBGKFILER FSSFNV"	/protein_id="AAD56315.1" /db_xref="G1:592564" /transla+io="Morreror"	/codon_start=1 /product="Yippee-like protein"	/gene="MZB10.2" 5113,5199 .5307,5386 .5463)	<b>&gt;</b>	· @ <b>&gt;</b>	gene <4496>5463 /gene="MZB10.2"	at_region	/note="exon predic		misc_feature complement(33723486) /note="exon predicted by varail complete"	/note="exon paddicted by xgrail, quality	VIRVPEGHCWVEGDNKT	/db_xref="GI:5923663" /translation="MGIQNILWQVAKKSFTGSIIGLTISDRCCSVVPVRGDSMSPTFN	<pre>/product="putative signal peptidase" /protein_id="AAD56314.1"</pre>	/gene="MZB10.1" /codon_start=1		SUBUNIT 2 GB:P46972 [Saccharomyces cerevislae]"  join(<21852338,24322504,29223081,3304>3281)	/gene="MZB10.1" /gene="MZB10.1" /note="similar to MTTOCHONDRTAL TANDER APPROXITE	/note= *e	misc_feature 1854 1933

```
40
40
40
                                              DЬ
                                                                       QΥ
                                                                                                            DЪ
                                                                                                                                δ
                                                                                                                                                           뮹
                                                                                                                                                                                       5 A B
                                                                                                                                                                                                                                                                         DЬ
                                                                                                                                                                                                                                                                                                    VΩ
                                                                                                                                                                                                                                                                                                                               В
                                                                                                                                                                                                                                                                                                                                                            Š
                                                                                                                                                                                                                                                                                                                                                                                               Matches
                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                misc_feature
                                                                                                                                                                   64504
                                                                                                                                                                                                                                                                                                                                         64324
 64684
                                                                                                                                                                                                                                                                                                                                                                                               2160;
                                                                                                                                                                                                                                                     121
                                                                                                                                         241
                                                                                                                                                                                               181
                           361
                                                                                                                                                                                                                                                                                                            61
                                                                                                                                                                                                                                                                                                                                                                   _
                                                                                                                                                                                                                                                                                                                                                                                                           Similarity
                                                                                                                                                                                                                                                                                                                                                     GAATTCCCCACGTCAACGTGACTGTGCATTCCACGTGGCGGATGTGGGGCCCTATAGTTGG
                                                                                                          AAAGAAAAGATTCTTACTTAGAGTCTCTGCTGTGTCGTATAAGGAATTCGCAGAGTCTGC
                                                                                                                                                                   AACTGTGAAAATTTTATCTCTTTTATAGATAAAGAATCTTGCTTTTTTCAGTTTTCAGTA 180
                                                                                                                                                                                                                                                                                             ACCATGACTCGGACGGATGTTGAAATTCATTGTCGTTGCCAATTGCGTTTGTCTCACTGA 120
                                                                                                                                                                                                                                                                                                                                       GAATTCCCCACGTCAACGTGACTGTGCATTCCACGTGGCCGATGTGGGCCCCTATAGTTGG
                                                                                                                                                                                               TGAAGAAGAATTGAAGAGAGTGTCCGAGGAAGGAGACCTTTGGTTTCAGTTTGTGAGTCT
                                                                                                                                                                                                                          AACTGTGAAAATTTTATCTCTTTTATAGATAAAGAATCTTGCTTTTTTCAGTTTTCAGTA
                                                                                                                                                                                                                                                                                ACCATGACTCGGACGGATGTTGAAATTCATTGTCGTTGCCAATTGCGTTTGTCTCACTGA
AAAGAAAAGATTCTTACTTAGAGTCTCTGCTGTGTCGTATAAGGAATTCGCAGAGTCTGC
                                                      AAACCCACCTGTTCTAATCTCTGCAAGCCCTAATAAGATCAATTTCACGTTGAGAAGGAG
                                                                 AAACCCACCTGTTCTAATCTCTGCAAGCCCTAATAAGATCAATTTCACGTTGAGAAGGAG
                                                                                                                                                                                                                                                                                                                                                                                              Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       marginal
10828. .
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /protein_id="AAD56316.1"
/db_xref="G1:5923665"
/db_xref="G1:5923665"
/translation="MLTHDROBELSLFLEMRRREKEHRADSLLTGSDAVSINATITAA
AAAALSGVSETASSQRYPLRRTAAENFLYSENEKSDYUMLLTPPGTPQFEKESHRSVM
MQHDAPNSRFTYLKSRLGNCREDIVSGNNNKPQTSSGSVAGLERPGSSGSSRSTSRPA
TPTRRSTTPTTSTSRPVTTRASNSRSSTPTSRATLTAAARATTSTAAPRTTTTSSGSAR
TPTRRSTTPTTSTSRPVTTRASNSRSSTPTSRFATLTAARATTSTAAPRTTTTSSGSAR
SATPTRSNPRESSASSKKPVSRPATPTRRPSTPTGPSIVSSKAPSRGTSPFTVNSLS
KAPSRGTSPSFTLNSSRPWKPPEMPGFSLEAPPNLRTTLADRPVSASRGRPGVASAPG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /translation="MCNGSDRLGQREAEEICTINNVRVFSYNSLRSATDSFHPTNRIGG
GGYGVVFKGVLRDGTQVAVKSLSAESKQGTREFLTEINLISNIHHPNLVKLIGCCIEG
GNRILVYEXLENNSLASVLLGSRSRYVFLDWSKRAAICVGTASGLAFLHEEVEPHVVH
RDIKASNILLDSNFSPKIGDFGLAKLFPDNVTHVSTRVAGTVGYLAPEXALLGQLTKK
RDYKSGGILVLEVISGNSSTRAAFGDEYMVLVEWVWKLREERRLLECVDPELFKFPAD
EVTRFIKVALFCTQAAAQKRPNMKQVMEMLRKELNLNEDALTEPGVYRGVNRGRNHR
GIGLEVGGGSGSESSTQRDKGKSSAVPQGSTSNSNISFQSITELAPR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /note="exon <11221. .>12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SRSGSIERGGGPTSGGSGNARRQSCSPSRGRAPIGNTNGSLTGVRGRAKASNGGSGCD
NLSPVAMGNKMVERVVNMRKLGPPRLTENGGRGSGKSSSAFNSLGYGRNLSKSSIDMA
IRHMDIRRGMTGNLRPLVTKVPASSMYSVRSRPGSVSSSPVATSSTVSSSDPSVDNIN
                                                                                                                                                                                                                                                                                                                                                                                                                                              <14213. ...>15448
/gene="MZB10.5"
/note="similar to hypothetical
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /gene="MZB10.4"
/codon_start=1
/codon_start=1
/product="putative receptor ser/thr
/protein_id="AAD56317.1"
/db_xref="GI:5923666"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              join(<11221. .11263,11488. .1
12298. .12448.12597. .>12992)
/gene="MZBHO.4"
join(11221. .11263,11488. .11
12298. .12448,12597. .12992)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ILCLDGNEAENDDLLSERSYAASPRNQYPKFTS" complement(10821. 10843)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    thaliana
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /gene="MZB10.4"
/note="similar to receptor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /note="exon predicted
                                                                                                                                                                                                                                                                                                                                                                                                         100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     L_shadowexon"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         xon predicted .>12992
                                                                                                                                                                                                                                                                                                                                                                                              0
                                                                                                                                                                                                                                                                                                                                                                                            Score 2160;
Pred. No. 0;
0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         by xgrail,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  by xgrail, quality
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             .11600,11690.
                                                                                                                                                                                                                                                                                                                                                                                                                        DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 kinase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      .11600,11690.
                                                                                                                                                                                                                                                                                                                                                                                           0;
                                                                                                                                                                                                                                                                                                                                                                                                                       8;
                                                                                                                                                                                                                                                                                                                                                                                                                                                  protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       quality
                                                                                                                                                                                                                                                                                                                                                                                                                       Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GB:S70769
                                                                                                                                                                                                                                                                                                                                                                                           Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                    GB:AAC27164
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             .11900,11982.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         marginal"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      .11900,11982.
                                                                                                                                                                                                                                                                                                                                                                                           0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      kinase"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 [Arabidopsis
                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                          420
                                                    64683
                                                                                                            64623
                                                                                                                                                                                              240
                                                                                                                                                                                                                          64503
                                                                                                                                                                                                                                                                                                                                      64383
                                                                                                                                                                   64563
64743
                                                                                360
                                                                                                                                        300
                                                                                                                                                                                                                                                                                64443
                                                                                                                                                                                                                                                                                                                                                                  60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              .12219
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      .12219
                                                                                                                                                                                                                                                                                                                                                                                            0,
             밁
                                 δÃ
                                                                밁
                                                                                      Qy
                                                                                                                         밁
                                                                                                                                              δÃ
                                                                                                                                                                               밁
                                                                                                                                                                                                     δÃ
                                                                                                                                                                                                                                  뫄
                                                                                                                                                                                                                                                          δõ
                                                                                                                                                                                                                                                                                          뫄
                                                                                                                                                                                                                                                                                                                Ş
                                                                                                                                                                                                                                                                                                                                            ₽
                                                                                                                                                                                                                                                                                                                                                                         γQ
                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                            Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                몽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             γ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             δÃ
                                                                                                                                                                                                                                       65524
                                                                                                                                                                                                                                                                                             65464
                                                                                                                                                                                                                                                                                                                                                   65404
                                                                                                                                                                                                                                                                                                                                                                                                         65344
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      65224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             65164
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    65104
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          65044
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                64984
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      64924
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            64864
                                                                                                                          65644
                                                                                                                                                                                 65584
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 65284
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    64804
                                                                                                                                                   1321
                                                                                                                                                                                                                                                                 1201
                                                                                                                                                                                                                                                                                                                                                                               1081
                                                                                                                                                                                                            1261
                                                                                                                                                                                                                                                                                                                         1141
                                                                                                                                                                                                                                                                                                                                                                                                                                     1021
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          961
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    421
                                                                                                                                                                                                                                                                                                                                                  AGTTATGCTGGAGTTATCAGGTCTGTATTGTCCAAACTGATGTTCAATATTTTACTGTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TTTAGAAGAAACCAGGAAAAGGATCGTTCTTGAACCTTCACATCTCCAGGTATATGCAAT
             GAAACTTTGACTGAGAATCTATCATCTTCTTCCTACAGGCATGGCTTGAGATGACAATCC
                                                                                                                                        TCTGCGTTTCTAGAGTACTATCAGGTATATACTCAGCGGCCAAAAGCTAAGGTTTTATTG
                                                                                                                                                                                               TCGCCTTTGGTGATGTGGACTAGGTTTTCGTCTAGCAAAGAAAAACATAAGGCTTTTGTTC
                                                                                                                                                                                                                                                     ATTTATTTGCAGACTTTCCCATGGGGAGGGAAATTGACTGGTGAATCCATAAAGTTTTTTC
                                                                                                                                                                                                                                                                                                          ACACCAAATTACTCAATTGCAAGTAAAACCTAATGCTGAGGTGTAAATGACTGATCTTGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TCTGTGCTAACTTTTTCACATCTACCAACGTTAACATAGTTGTATTGTAAGTTATCTTCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TCTTCGCTTAGGTCTTTGACTTTTGCGGGTTTCATGGAGCCTGAGTATGATACTCCCATAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TTATATAAGTAAAAGTTCAGATTTTGTTTTTCTAATCACGAAACTGTTTCAGGAAAAGTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GGTAAATTGATTTGAGTTGTCATTAGGAACCAAACAAATAACTTTACTGTTATAGACTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TACATTTCGTTAGTGTAGTGGGAGGATTATATTTCTCATTGTTTCTTGCTGTGAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TACATTTCGTTAGTGTAGTGGGAGGATTATATTTCTCATTGTTTCTTGCTGTGAATTTTG
                                       AAGTGAGGGAGGAGGAACCATCTCATGTGAGAGCCAATTGTGAAGCACAACACAAGT 1500
                                                                                                                                                                                 TCGCCTTTGGTGATGTGGACTAGGTTTTCGTCTAGCAAAGAAAAACATAAGGCTTTGTTC
                                                                                                                                                                                                                                        ATTTATTTGCAGACTTTCCCCATGGGGAGGGAAATTGACTGGTGAATCCATAAAGTTTTTC
                                                                                                                                                                                                                                                                                             ACACCAAATTACTCAATTGCAAGTAAACCTAATGCTGAGGTGTAAATGACTGATCTTGAG
                                                                                                                                                                                                                                                                                                                                                                              CAAGTATTATAACAAGATAATGTCCATATATCACAAATATGCTGAGGTGACCACAAGAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TCTGTGCTAACTTTTCACATCTACCAACGTTAACATAGTTGTATTGTAAGTTATCTTCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TCTTCGCTTAGGTCTTTGACTTTGCGGGTTTCATGGAGCCTGAGTATGATACTCCCATAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TTATATAAGTAAAAGTTCAGATTTTGTTTTTCTAATCACGAAACTGTTTCAGGAAAAGTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GGTAAATTGATTTGAGTTGTCATTAGGAACCAAACAATAACTTTACTGTTATAGACTGC
                                                                                                                          TCTGCGTTTCTAGAGTACTATCAGGTATATACTCAGCGGCCAAAAGCTAAGGTTTTATTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1020
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      480
                                                                                                                                                   1380
                                                                                                                                                                                                            1320
                                                                                                                                                                                                                                                                 1260
                                                                                                                                                                                                                                                                                             65523
                                                                                                                                                                                                                                                                                                                                                   65463
                                                                                                                                                                                                                                                                                                                                                                              1140
                                                                                                                                                                                                                                                                                                                                                                                                         65403
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  960
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             65223
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    65163
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          65103
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                65043
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  660
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              540
              65823
                                                                   65763
                                                                                               1440
                                                                                                                                                                                                                                       65583
                                                                                                                                                                                                                                                                                                                         1200
                                                                                                                                                                                                                                                                                                                                                                                                                                     1080
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      64983
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            64923
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          64803
                                                                                                                                                                                 65643
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 65343
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       65283
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    64863
                                                                                                                          65703
```

```
REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                         VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RESULT 2
ATACO11436
                                                                                           REFERENCE
                                                                                                                                                                                                REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ρy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 뫄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ρ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           QΨ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Š
                          TITLE
JOURNAL
                                                                                                                                                          AUTHORS
TITLE
                                                                                                                                    JOURNAL
                                                                                                                                                                                                                       JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                 ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       66424
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   66124
                                                                                                                                                                                                           Lin,X., Kaul,S., Town,C.D., Benito,M.-I., Creasy,T.H., Ronning,C.M., Koo,H., Fujii,C.Y., Utterback,T.R., Barr Bowman,C.L., White,O., Nierman,W.C. and Fraser,C.M. Arabidopsis thaliana chromosome III BAC F3L24 genomic upublished
                                                                                Submitted (06-OCT-1999) The I Medical Center Dr. Rockville, 3 (bases 1 to 106688)
             Submitted (24-JAN-2001) The Institute for Genomic Research,
                                               Direct Submission
                                                                       Lin,
                                                                                                                                                   Lin, X. and Kaul, S. Direct Submission
                                                                                                                                                                                                                                                                                                                       Eukaryota, Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rossidae; eurosidas II; Brassicales; Brassicaceae; Arabidopsis. [] (bases 1 to 106688)
                                                                                                                                                                                                                                                                                                                                                                                                              Arabidopsis thaliana
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ATAC011436 106688 bp
Arabidopsis thaliana chromosome
                                                                                                                                                                                                                                                                                                                                                                                                                                Arabidopsis thaliana.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 complete sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AC011436.7 GI:12408733
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GAGAATCCTCGAGTATGATATGATTTAATGAAAATGTATTCGTCTTACCTAATCAACA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TTGTTTGAGTTACCATGCATTGTAGTTTTACAAGTGTAGCTCTCAGCCCCTTCATCAAAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TTGTTTGAGTTACCATGCATTGTAGTTTTACAAGTGTAGCTCTCAGCCCCTTCATCAAAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AGTAGGAATAAGAAAGAGCAGCATGAGGAGTCTCTCAGGTCTATCTGCATTTCAAGATGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AGTAGGAATAAGAAAGAGCAGCATGAGGAGTCTCTCAGGTCTATCTGCATTTCAAGATGA 2040
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GATATATGTGAACAAGTCAGATTTCAGAGTCATCAACACAAGAGGACGTGAACTTAGGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GATATATGTGAACAAGTCAGATTTCAGAGTCATCAACACAAGAGGGACGTGAACTTAGGGA 1980
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TTGGGAAGTCATATGAAACTCGTCCATGGGATTTAACAGGACAATTTATCGGCTAACAAT 1920
                                                                                                                                                                                            (bases 1 to 106688)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TTGGGAAGTCATATGAAACTCGTCCATGGGATTTAACAGGACAATTTATCGGCTAACAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AGGAGCTGCTAAGGGATTTCCTGTTCAATGGGGTGGATGAGTTAGGCACAAAAACATTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AGGAGCTGCTAAGGGATTTCCTGTTCAATGGGGTGGGTGAGTTAGGCACAAAAACATTCA 1800
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CATTAGTGTCCCCATTATTAATTAGCTTGTGAAGATGTTGAAAATGATTTGAACAAAATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CATTAGTGTCCCCATTAGTTAAGTTAGCTTGTGAAGATGTTGAAAATGATTTGAACAAATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CATGGTCTTCTTAAAAGATTAGTAGGTGAAGCAAAGGCAAAGGTATAAAAGATTTGATCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CATGGTCTTCTTAAAAGATTAGTAGGTGAAGCAAAGGCAAAGGTATAAAAGATTTGATCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ACAGACACTGTATCTGTATTGTTACAATGGATATTGATTTGGTGTTTGCAGGATCCTGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ACCTGACATGGCGAGCACAAAAGGTGATTTCATTTCCTTTTGTGTAATTTGCATGTTTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ACAGACACTGTATCTGTATTGTTACAATGGATATTGATTTGGTGTTTTGCAGGATCCTGGA 1620
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ACCTGACATGGCGAGCACAAAAGGTGATTTCATTTCCTTTTTGTGTAATTTGCATGTTTGA 1560
                                                                                                    Institute f
e, MD 20850,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     III
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DNA lir
BAC F3L24
                                                                                                for Genomic Research
), USA, xlin@tigr.org
                                                                                                                                                                                                                                                                                            Creasy, T.H., Haas, B.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              genomic sequence,
                                                                                                                                                                                                                                                                          Barnstead, M.E
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PLN 24-JAN-2001
                                                                                                                                                                                                                                sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          66483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               66363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  66303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            66063
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1740
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               66003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1680
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        66183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           66123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  65943
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  65883
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    COMMENT
                                                   gene
                                                                                                                                                                                                                                                                                                                                                                                                   CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                mRNA
                                                                                                                  misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Genes were identified by a combination of three methods: Gene prediction programs including GRAIL (available by anonymous ftp from arthur.epm.ornl.gov), Genefinder (Phil Green, University of Washington), Genscan (Chris Burge, http://gnomic.stanford.edu/-chris/GENSCANW.html), and NetPlantGene (http://gnomic.stanford.edu/-chris/GENSCANW.html), searches of the complete sequence against a peptide database and the Arabidopsis EST database at TIGR (http://www.tigr.org/tdb/at/at.html). Annotated genes are named to indicate the level of evidence for their annotation. Genes with similarity to other proteins are named similarity but with EST similarity are named s 'unknown' proteins. Genes without protein or EST similarity, that are predicted by more annotated as 'hypothetical' proteins. Genes encoding tRNAs are predicted by tRNAscan-SE (Sean Eddy, http.//gnorms.mist)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      genomic sequence that are not annotated as genes but have exons by GRAIL are annotated as misc features.

Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   http://ftp.genome.washington.edu/RM/RepeatMasker.html). Regions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       http://genome.wustl.edu/eddy/tRNAscan-SE/). Simple repeats are identified by repeatmasker (Arian Smit,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          BAC clone F3L24 is from Arabidopsis chromosome molecular marker CIC7A12.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Medical Center Dr., Rockville, On Jan 24, 2001 this sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 The orientation of the sequence is from SP6 to T7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  e-mail: xlin@tigr.org
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      9712 Medical Center Dr. Rockville, MD 20850, US
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Address all correspondence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Institute for Genomic
                                                                                                                                                            /PICTELINI I - RAF14017.1"
/PICTELINI I - RAF14017.1"
/PICTELINI I - RAF14017.1"
/AB_xref="G1:6478912"
/Translation="MALSMEFGFSIGSCFKAPUPPVLISASPUKINFTLRRKKRFLL
RVSAVSYKEFARSALEETKRRIVLEPSHLQEKYSSWTGLDGKTELQMLAFKSSKIRLL
RVSAVSYKEFARSALENTKRIVLEPSHLQEKYSSWTGLDGKTELQMLAFKSSKIRLL
RSMAIENETMQVFDFAGFMEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTDYQ
DKYYNKIMSIKHKYAETFPWGGKLTGSSIKFFSPLVMWTRFSSSKEKKKAFSAFLEY
                                            complement(<2362.
                                                                     marginal_shadowexon"
                                                                                                                                                                                                                                                                                                                                           Juin(248. .469,653. .769,852. 1419. .1523,1612. .1662,1743. //gene="13124.1"
                                                                                                             complement(1934.
                                                                                                                             DFLFNGVDELGTKTFIDYFPEYQTEDGTVSDKRSIIGKSYETRPWDLTGQFIG
                                                                                                                                             YQAWLEMTIQVREEMEPSHVRANCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLR
                                                                                                                                                                                                                                                                                                                                                                                                                            /note="MZBI0.18; nearly identical to hypothetical protein GB:AAD56331 [Arabidopsis thaliana]" join(<248. .469,653. .769,852. .946,1033. .1126,1213. .1341419. .1523,1612. .1662,1743. .>1916)
                                                                                     /note="exon predicted
                                                                                                                                                                                                                                                                                                                         /note="hypothetical protein"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                complement(18. .122)
/note="exon predicte"
                                                                                                                                                                                                                                                                                                              /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                marginal_shadowexon"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (AC009326:64324.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /note="overlap with BAC clone
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /db_xref="taxon:3702"
/chromosome="III"
                                                                                                                                                                                                                                                                                                                                                                                                                 /gene="F3L24.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /map-"CIC7A12"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /organism="Arabidopsis
/cultivar="Columbia"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           clone="F3L24"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       .106688
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             predicted by xgrail, quality
      identical
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         to:
                                                                                     by xgrail,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           version
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MD 20850, USA
    ţ
hypothetical
                                                                                                                                                                                                                                                                                                                                                                      .946,1033.
.1916)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           replaced
                                                                                     quality
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            III and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           gi:12280819
                                                                                                                                                                                                                                                                                                                                                                                        .1126,1213. .1344
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               end of the BAC
protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                    .1126,1213. .1344
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          is near the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            predicted
```

of

```
gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /note="exon predicted by xgrail, quality good_shadowexon" complement(4553. 4736)
/note="exon predicted by xgrail, guality good_shadowexon"
5389. 5442
                                         IKEVADEFEKRVLKIQOSNNDELKSYPEAELVKÖKKELVAILTESVREAVSGLNROAG
IVGECSKCVADAHSKQVKHLNLLVETSSIALDQIRADDPGNKHVSQQVBPNIGISEK
SDNLPAACGINVGVSVPERSNPNTRAEVREDSIQKGGKKKSCSQMDAQSNRPLKAK
DMEHVASTKYVSPTEKLDDEVDIVEPNESLGLTQEINDNRSRLPPRGKKKTFPSKVSV
LRSSNRIRDRPLQSNSIENMTSIPVQPHQTASRGAGKSHVSSSAKVEKQTPNQSPAFI
GPFKFPSVPSPSSYKKRLKQMERGVSYVLADGVVLENTEFLNIFEGQTILDESGPDLI
URFIQLRLDKNKPLRFDFLPSSFLSELRRQYNKFVGAADKSAFYFSTLARVPFNVRPK
                                                                                                                                                                                                                                                                                      KQLEGSQFGFLLQMGTHQFSVMFLHYILSRQLVTDKKYEMWWVFAGKPIRFAIDDFAL
VTGLNCSKSGFNKKDARTRGKMKAVQNPTRFYKALFGKERKPTSQWIVGKLSMGKKYK
DPLTRFRLSLLLLVDGILCPTCSRTIIDPDHVEMVKDVESFLKYPWGRTSFLATIRSA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /product="putative RNA-binding protein"
/protein_id="AAF14040.1"
/protein_id="AAF14040.1"
/db_xref="GI:6478935"
/translation="MDEIANKGLEVKRSRKIRDSDIERISVTGYDIELPREHVESELK
KLFSPCGEITDVHIPETRNSSLWSHAFIYFVGEGTADKALQLNGSDMGGWTVDAEADP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GB:AAD56336 [Arabidopsis thaliana]; contains Pfam profile:
RNA recognition motif. (aka RRM, RBD, or RNP domain)"
complement(join(<2362. 2462,2534. .2703,3004. .3276,
3353. .3384,3475. .>3495))
complement(join(2362. .2462,2534. .2703,3004. .3276,
3353. .3384,3475. .3495))
                                                                                                                                                                                               KORTAKELAQDITTAIQGFPHALVLVTVACCPAIIYTADSVFNILDPTIPVEKLVQYVL
GLSLAUNVHDARTIDQSGMDRYTSLLNEELLAKEIDLSESSDEEDEEVSHLLSLIMEE
HPFEHNSWSGGVDAUNVEHPSEDEFMADDCVNQAKGDGDDEMDVDGSGVAALEEREECA
AGEGVDGLDGEANKDGPVTDKDGVSFADGEGLQOEVPRAGEMENNDSGSAGHGLREAV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        complement(join(10632. .10789,10875. .11340,11454. .11538,
11622. .12016,12222. .12341,12417. .12578,12644. .13375,
13467. .14351))
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /note="MZB10.21; identical to hypothetical protein GB:AAD56332 [Arabidopsis thaliana]" complement(join(<10632...10789,10875...11340,11454...11538, 11622...12016,12222...12341,12417...12578,12644...13375, 13467...14351)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /note="exon predicted by xgrail, quality excellent"
complement(9619. 9780)
/note="exon predicted by xgrail, quality good_shadowexon"
complement(<10632. >14351)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /note="exon predicted by complement(9181. .9241) /note="exon predicted by
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /note="exon predicted by 5748. .9002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FPKEEDNFSIYYLLGEDAIDKAPKLSGTDMGGGRKAVVRFVAYHGRNIFHPRRQKGRI
ICGRPDEKPKMAAIMKIIKKPKRTAKKKIIKKPKMTLE"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        marginal.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Mutator transposon"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /gene="F3L24
YLIRKHGVNGYMLTQRLEPMTVSRPKIQCSCSSLGLVGIASVVLLELHSVNAMEYCGK
                         WFAEIDVIYCPMQVERQHWVGLVIDLKKWGVTVLDCNRDVLKDEQVEKYVEHITIMLP
                                                                                                                                                                                                                                                                                                                                                        /translation="MGDVELPKRLFRLGSEPEGRKRINNYFTLRWIEIIKAALDQNHL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /gene="F3L24.4"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    13467
                                                                                                                                                                                                                                                                                                                                                                                                    /protein_id="AAF14018.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /gene="F3L24.4"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /gene="F3L24.3"
                                                                                                                                                                                                                                                                                                                                                                                 /db_xref="GI:6478913"
                                                                                                                                                                                                                                                                                                                                                                                                                             /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                             'note="hypothetical protein"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /gene="F3L24".4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /pseudo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            'note="MZB10.20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               .>14351))
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               .9107
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        _shadowexon"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            similar
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          by xgrail,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ç
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 xgrail,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          xgrail, quality good"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MURA transposase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          quality
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   quality
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            of maize
                                      8
                                                                                         밁
                                                                                                                             Ş
                                                                                                                                                                           밁
                                                                                                                                                                                                               δÃ
                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                    당
                                                                                                                                                                                                                                                                                                                                                                                             γ
                                                                                                                                                                                                                                                                                                                                                                                                                                             В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ş
                                                                                                                                                                                                                                                                                                      Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Matches 2160;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                    301
                                                                                         481
                                                                                                                               481
                                                                                                                                                                             421
                                                                                                                                                                                                                      421
                                                                                                                                                                                                                                                                  361
                                                                                                                                                                                                                                                                                                                                                      301
                                                                                                                                                                                                                                                                                                                                                                                                                                             241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               181
                                                                                                                                                                                                                                                                                                             361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Similarity
                      GGTAAATTGATTTGAGTTGTCATTAGGAACCAAACAAATAACTTTACTGTTATAGACTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ACCATGACTCGGACGGATGTTGAAATTCATTGTCGTTGCCAATTGCGTTTGTCTCACTGA 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GAATTCCCCACGTCAACGTGACTGTGCATTCCACGTGGCGGATGTGGGCCCTATAGTTGG
                                                                                                         TACATTTCGTTAGTGTAGTGGGAGGATTATATTTCTCATTGTTTCTTGCTGTGAATTTTG
                                                                                                                                                                                                                                                                                                                                                                               AAACCCACCTGTTCTAATCTCTGCAAGCCCTAATAAGATCAATTTCACGTTGAGAAGGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AACTGTGAAAATTTTATCTCTTTTATAGATAAAGAATCTTGCTTTTTCAGTTTTCCAGTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GAATTCCCCACGTCAACGTGACTGTGCATTCCACGTGGCGGATGTGGGCCCCTATAGTTGG
                                                                                                                                                                                                    TTTAGAAGAAACCAGGAAAAGGATCGTTCTTGAACCTTCACATCTCCAGGTATATGCAAT
                                                                                                                                                                                                                                                                                        AAAGAAAAGATTCTTACTTAGAGTCTCTGCTGTGTCGTATAAGGAATTCGCAGAGTCTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TGTTGTAATGGCTTTATCAATGGAGTTTGGGTTTTCAATTGGGTCATGCTTCAAGGCACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AACTGTGAAAATTTTATCTCTTTTATAGATAAAGAATCTTGCTTTTTTCAGTTTTCAGTA
                                                                                         TACATTTCGTTAGTGTAGTGGGAGGATTATATTTCTCATTGTTTCTTGCTGTGAATTTTG
                                                                                                                                                                             TTTAGAAGAAACCAGGAAAAGGATCGTTCTTGAACCTTCACATCTCCAGGTATATGCAAT
                                                                                                                                                                                                                                                                  AAAGAAAAGATTCTTACTTAGAGTCTCTGCTGTGTCGTATAAGGAATTCGCAGAGTCTGC
                                                                                                                                                                                                                                                                                                                                                        AAACCCACCTGTTCTAATCTCTGCAAGCCCTAATAAGATCAATTTCACGTTGAGAAGGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                               TGTTGTAATGGCTTTATCAATGGAGTTTGGGGTTTTCAATTGGGTCATGCTTCAAGGCACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /protein_id="AAF14019.1"
/db_xref="GI:6478914"
/txanslation="MOTLHQSOLLQNPAEAANNQSESDAPPKQVAQAMERLNQAARVI
AUTRLGADRILEAMFVASQPRHTDMPLQLFLREDASMRQHLQDLRLIGKKLEESGVLT
ESIRSRSNSWGLHMPLVQPDGAVVAXAMKRQLAGQAGASAVDRTRLALKAFTDQKRRF
FPHIDDGLKMEPSSKKHRASHLLLENGREEPVDYKTLPDIQSRLEKLVPSVKVSTYGR
LAWLKRAMSLPGSGSDDDTEASKPIFQSSSKLASGLQTEVVDKIAVIELSFB5LFRAI
VSLSPAGSVDDDAVAFFSDEVTSNLLALKYTDSHVKLFKFSCFSFIPFLQGGSYLHA
RGFSVYHYVKHITVIKMKLILYIV"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GB:AAD56333 [Arabidopsis join(15834..16133,16228./gene="F3L24.5"]
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          excellent_shadowexon" 15070. .15229
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /note="exon 17412. .1755
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /gene="F3L24.5"
/note="".-"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /gene="F3L24.5"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /note="exon predicted by xgrail, quality marginal"
15834. .>17202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                14460. .14526
/note="exon predicted by
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /note="unknown protein"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /note="MZB10.22; identical to hypothetical protein
3B:AAD56333 [Arabidopsis thaliana]"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /note-"exon
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            exon predicted by xgrail,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        predicted by xgrail,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 2160;
Pred. No. 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   xgrail,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            .16393,16566.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          quality excellent"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   quality
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 quality excellent"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            .>17202)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 106688;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
```

0;

600 540 540 480 480 420 420 360 300 300 240 240 180

1680	CATGGTCTTCTTAAAAGATTAGTAGGTGAAGCAAAGGCAAAGGTATAAAAGATTTGATCC  [	1621 1621
N N	GACACTGTATCTGTATTGTTACAATGGATATTGATTTTGGTGTTTTGCAGGATCCTGGA	56
1560 1560	ACCTGACATGGCGAGCACAAAAGGTGATTTCATTTCCTTTTGTGTAATTTGCATGTTTGA	1501 1501
1500 1500	AAGTGAGGAGAGATGGAACCATCTCATGTGAGAGCCAATTGTGAAGCACAACACAAGT	144 <b>1</b> 1441
1440 1440	GAAACTTTGACTGAGAATCTATCATCTTCCTACAGGGATGGCTTGAGATGACAATCC 	1381 1381
1380 1380	TCTGCGTTTCTAGAGTACTATCAGGTATATACTCAGCGGCCAAAAGCTAAGGTTTTATTG 	1321 1321
1320 1320	TCGCCTTTGGTGATGTGGACTAGGTTTTCGTCTAGCAAAGAAAAACATAAGGCTTTĞTTC 	1261 1261
1260 1260	ATTTATTTGCAGACTTTCCCATGGGGAGGGAAATTGACTGGTGAATCCATAAAGTTTTTC	1201
1200 1200	ACACCAAATTACTCAATTGCAAGTAAACCTAATGCTGAGGTGTAAATGACTGATCTTGAG	1141 1141
1140 1140	CAAGTATTATAACAAGATAATGTCCATATATCACAAATATGCTGAGGTGACCACAAGAAT	1081 1081
1080	GTTCTTCTTTAGGGACCTTAATCCTTTGCATCAGTTGACTGAC	1021 1021
1020 1020	AGTTATGCTGGAGTTATCAGGTCTGTATTGTCCAAACTGATGTTCAATATTTTACTGTAT	961 961
960 960	TCTGTGCTAACTTTTTCACATCTACCAACGTTAACATAGTTGTATTGTAAGTTATCTTCT	901 901
900	TCTTCGCTTAGGTCTTTGACTTTGCGGGTTTCATGGAGCCTGAGTATGATACTCCCATAT	. 841 841
840 840	GCAGTACAAACTGATTGCTTTAGTCCCATTTCCTTACTTTCAATTGATTG	781 781
780 780	AAAGATTAGACTCTTGAGGAGTATGGCAATAGAGAATGAGACAATGCAGGTTTAACTTCA 	721 721
720 720	TAGTAGCATGACAGGACTAGATGGTAAGACCGAACTTCAAATGCTTGCT	661 661
660 660	TTATATAAGTAAAAGTTCAGATTTTGTTTTTCTAATCACGAAACTGTTTCAGGAAAAGTA 	601 601

ρV

P Qy Ş

9 OY OY OY OY OY OY OY OY

밁

DЬ	Qy	Db	Qy	Db	ΥO	рb	Qy	Db	QУ	Дb	у	DЬ	Qy	DЬ
2101	2101	2041	2041	1981	1981	1921	1921	1861	1861	1801	1801	1741	1741	1681
GAGAATCCTCGAGTATGATATGAATGAAAATGTATTCGTCTCTACCTAATCAACA	GAGAATCCTCGAGTATGATATGATTTTAATGAAAATGTATTCGTCTCTACCTAATCAACA	TTGTTTGAGTTACCATGCATTGTAGTTTTACAAGTGTAGCTCTCAGCCCTTCATCAAAAT	TTGTTTGAGTTACCATGCATTGTAGTTTTACAAGTGTAGCTCTCAGCCCTTCATCAAAAT	AGTAGGAATAAGAAAGAGCAGCATGAGGAGTCTCTCAGGTCTATCTGCATTTCAAGATGA	AGTAGGAATAAGAAAGAGCAGCATGAGGAGTCTCTCAGGTCTATCTGCATTTCAAGATGA	GATATATGTGAACAAGTCAGATTTCAGAGTCATCAACACAAGAGGACGTGAACTTAGGGA	GATATATGTGAACAAGTCAGAGTTCAGAGTCATCAACACAAGAGGACGTGAACTTAGGGA	TTGGGAAGTCATATGAAACTCGTCCATGGGATTTAACAGGACAATTTATCGGCTAACAAT	TTGGGAAGTCATATGAAAACTCGTCCATGGGATTTAACAGGACAATTTATCGGCTAACAAT	TTGATTACTTTCCAGAGTACCAAACAGAAGATGGAACTGTAAGCGATAAACGAAGTATCA	TTGATTACTTTCCAGAGTACCAAACAGAAGATGGAACTGTAAGCGATAAACGAAGTATCA	AGGAGCTGCTAAGGGATTTCCTGTTCAATGGGGTGGATGAGTTAGGCACAAAAACATTCA	AGGAGCTGCTAAGGGATTTCCTGTTCAATGGGGTGGATGAGTTAGGCACAAAAACATTCA	
2160	2160	2100	2100	2040	2040	1980	1980	1920	1920	1860	1860	1800	1800	1740

AY099706
LOCUS
DEFINITION
ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM

FLI\_CDNA.

AY099706 1358 bp mRNA linear PLN 06-MAY-2002 Arabidopsis thaliana unknown protein (At3g09150) mRNA, complete cds. AY099706 AY099706.1 GI:20466479

REFERENCE AUTHORS

, Q

Arabidopsis thaliana.

Arabidopsis thaliana

Arabidopsis thaliana

Arabidopsis thaliana

Bukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae; eurosids II; Brassicales; Brassicaceae; Arabidopsis.

1 (bases 1 to 1358)

1 (bases 1 to 1358)

3 lyuyen,M. Karlin Neumann,G., Southwick,A., Lam,B., Miranda,M., Palm,C.J., Bowser,L., Jones,T., Banh,J., Carninci,P., Chen,H., Cheuk,R., Chung,M.K., Hayashizaki,Y., Ishida,J., Kamiya,A., Cheuk,R., Chung,M.K., Hayashizaki,Y., Ishida,J., Kamiya,A., Kawai,J., Kim,C., Lin,J., Liu,S.X., Narusaka,M., Pham,P.K., Sakano,H., Sakurai,T., Satou,M., Seki,M., Shinn,P., Yamada,K., Shinozaki,K., Ecker,J., Theologis,A. and Davis,R.W.

TITLE JOURNAL

Direct Submission
Submitted (24-APR-2002) DNA Sequencing and Technology Center,
Stanford University, 855 California Avenue, Palo Alto, CA 94304,

COMMENT

e-mail for correspondence: arab@sequence.stanford.edu
RIKEN Genomic Sciences Center (GSC) members carried out the
collection and clustering of RAFL cDNAs (RAFL cDNA : 'RIKEN
Arabidopsis Full-Length cDNA'): Seki,M., Narusaka,M., Ishida,J.,
Satou,M., Kamiya,A., Sakurai,T., Carninci,P., Kawai,J.,
Hayashizaki,Y. and Shinozaki,K.

Satou, M., Kamiya, A., Sakurai, T., Carninci, P., Kawai, J., Hayashizaki, Y. and Shinozaki, K.

The Salk, Stanford, PGEC (SSP) Consortium members carried out the sequencing and annotation of the RAFL cDNAs: Nguyen, M., Southwick, A., Karlin-Neumann, G., Lam, B., Miranda, M., Palm, C.J., Bowser, L., Jones, T., Banh, J., Chen, H., Cheuk, R., Chung, M.K., Kim, C., Lin, J., Liu, S.X., Pham, P.K., Sakano, H., Shinn, P., Yamada, K., Ecker, J., Theologis, A. and Davis, R.W.

Xim,C., Lin,J., Liu,S.X., Pham,P.K., Sakano,H., Shinn,P.,
Yamada,K., Ecker,J., Theologis,A. and Davis,R.W.
Nguyen,M. (SSP/Stanford) and Seki,M. (RIKEN GSC) contributed
equally to this work. Shinozaki,K. (RIKEN GSC) and Davis,R.W.

밁

Q

Š

1681 CATTAGTGTCCCCATTATTAATTAGCTTGTGAAGATGTTGAAAAATGATTTGAACAAAATC 1740

 QY
 QY

 Db
 Db

 Db
 Db

1791 AAAACATTCATTGATTACTTTCCAGAGTACCAAACAGAAGATGGAACTGTAAGCGATAAA			
1731 GAACAAAATCAGGAGCTGCTAAAGGGATTTCCTCTTCAATGGGGTGGATGAGTTAGGCACA	Oy           AGGAAAAGTATAGTAGCATGACAGGACTAGATGGTAAGACCGAACTTCAAATGCTTGCT	651 AGGAAAAGTATAGTAG             359 AGGAAAAGTATAGTAG	Db Oy
953	358		
1671 GATTTGATCCCATTAGTGTCCCCATTATTAATTAGCTTGTGAAAGATGTTGAAAATGATTT	TATAGACTTGCTTATATATAAGTAAAAGTTTCAGATTTTTGTTTTTTTT	358	OV Db
1611 GGATCCTGGACATGGTCTTCTTAAAAGATTAGTAGTGAAGCAAAGGCAAAGGTATAAAA	QY GTGAATTTTGGGTAAATTGATTTGAGTTGTCATTAGGAACCAAACAAA		Qy
902		358	Db
1551 GCATGTTTGAACAGACACTGTATCTGTATTGTTACAATGGATATTGATTTGGTGTTTTGCA	CT		
1491 CAACACAAGTACCTGACATGGCGAGCACAAAAGGTGATTTCATTTTCTTTTTTGTGTAATTT	QY CAGAGTCTGCTTTAGAAGAAACCAGGAAAAGGATCGTTCTTGAACCTTCACATCTCCAGG 470	411 CAGAGTCTGCTTTAGA:	Db Qy
1431 ATGACAMICCANG TGAGGANGANATIGGANCCATCTCATG TGAGACCAMITGTGANGCA	TGAGAAGGAGAAAGAAAAGATTCTTACTTAGAGTCTCTGCTGTGTGTCGTATAAGGAATTCG 410	351 TGAGAAGGAGAAAGAA 	Qy Db
	TCAAGGCACCAACCCACTGTTCTAATCTCTGCAAGCCCTAATAAGATCAATTTCACGT 350	291 TCAAGGCACCAAACCC	Db Qy
	TTGTGAGTCTTGTTGTAATGGCTTTATCAATGGGTTTTGGGTTTTCAATTGGGTCATGCT 290		Дb
11111111111111111111111111111111111111	GTCTCACTGAAACTGTGAAAATTTTATCTCTTTTATAGATAAAGAATCTTGCTTTTTTCA 170 LILILILILILILILILILILILILILILILILILILI	111 GTCTCACTGAAACTGT(	Qy .
1191   TGATCTTGAGAGATTTATTTGCAGAGAGAGAGGGAGAGGGAGAGTGATGATGATGATGATGA	Score 608; DB 8; Length 1358; Pred. No. 1e-121; 0; Mismatches 0; Indels 679; Gaps 7;	Match 28.1%; ocal Similarity 66.7%; s 1357; Conservative	Query Matc Best Local Matches 13
1131 CCACAAGAATACACCAAATTACTCAATTGCAAGTAAACCTAATGCTGAGGTGTAAATGAC			OKIGIN
1071 ATTACCAAGACAAGTATTATAACAAGATAATGTCCATATATCACAAATATGCTGAGGTGA	YQAWLEMTIQVREEMEPSHVRANCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLR QY DFLFNGVDELGTKTFIDYFPEYQTEDGTVSDKRSIIGKSYETRPWDLTGQFIG" Db	YQAWLEMTI( DFLFNGVDE) 426 a 231 c	BASE COUNT
573		RVSAVSYKE RSMAIENETI DKYYNKIMS	
5/3	/translation="MALSMEFGFSIGSCFKAPNPPVLISASPNKINFTLRRRKKRFLL Ov	/procein_ /db_xref= /translat	
951 GTTATCTTCTAGTTATGCTGGAGTTATCAGGTCTGTATTGTCCAAACTGATGTTCAATAT		/codon_start=1 /product="unknown	•
517 ACTCCCATATTCTGTGCTAACTTTTTCACATCTACCAACGTTAACATAGTTGTATT	4.1" Db	/noce="F3L24.1" 1391128 /gene="At3g09150"	CDS
891 ACTCCCATATTCTGTGCTAACTTTTTCACATCTACCAACGTTAACATAGTT	At 3 (9) 150" Qy	/gene="At:	gana
476AGGTCTTTGACTTTGACGTTTCATGAGGAGCCTGAGTATGAT	note-"This clone is in pBluescript cotype: Columbia" Db	/note="This ecotype: Co	
		/chromosome="3"	
	'Organism="Arabidopsis thaliana"  'The ref="fayon: 3702"		
		Locatio	FEATURES SOUTCE
419 TTAAATCTTCAAAGATTAGACTCTTGAGGAGTATGGCAATAGAGAATGAGACAATGC	contributed equally to this work as PIs.	(SSP/Stanford) co	

```
RESULT 4
AB045112
LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 gg
Qg
Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     닭
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               δÃ
                                                                                                                                                                                                                                                                                                                                                                                         MEDLINE
REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Вρ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             δõ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ACCESSION
                                                                                                                                                                                                                                                                                               FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                               JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ORGANISM
                                                                                                                                                                                                                                                                                                                                                                           TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                         TITLE
                            3'UTR
                                                                                                                                                                                                                                          gene
                                                                                                                                                                                                                                                                                source
polyA_site
                                                                                                                                                                                                                                                                                                                                                                                                                                                         Kohchi, T., 1
Lagarias, J.:
The arabido
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae; eurosids II; Brassicales; Brassicaceae; Arabidopsis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      protein, complete AB045112
                                                                                                                                                                                                                                                                                                                        Submitted (21-JUN-2000) Takayuki Kohchi, Nara Institu and Technology, Graduate School of Biological Science Takayama, Ikoma, Nara 630-0101, Japan (B-mail:kouchi@bs.aist-nara.ac.jp, Tel:81-743-72-5561
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Arabidopsis thaliana mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                             ferredoxin-dependent biliverdin replant Cell 13 (2), 425-436 (2001)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Arabidopsis thaliana
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AB045112.1 GI:13359272
                                                                                                                                                                                                                                                                                                            (E-mail:kouchi@bs.a
Fax:81-743-72-5569)
                                                                                                                                                                                                                                                                                                                                                                            Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                          Kohchi, T
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Arabidopsis thaliana cDNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AACTTAGGGAAGTAGGAATAAGAAAGAGCAGCATGAGGAGTCTCTCCAGGTCTATCTGCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TTCAAGATGATTGTTTGAGTTACCATGCATTGTAGTTTTACAAGTGTAGCTCTCAGCCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AACTTAGGGAAGTAGGAATAAGAAAGAGCAGCATGAGGAGTCTCTCAGGTCTATCTGCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GGCTAACAATGATATGTGAACAAGTCAGATTTCAGAGTCATCAACACAAGAGGACGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TTCAAGATGATTGTTTGAGTTACCATGCATTGTAGTTTTACAAGTGTAGCTCTCAGCCCT
                                                                                                                                                                                                                                                                                                                                                                                                      (bases 1 to 1337)
                                                                                                                                                                                                                                                                                                                                                                                                                                              arabidopsis hy2 gene encodes phytochromobilin redoxin-dependent biliverdin reductase
                                    /product="phytochromobilin synthase HY2 protein"
/protein_id="BAB33374.1"
/protein_id="BAB33374.1"
/db_xref="GI:13359273"
/db_xref="GI:13359273"
/db_xref="GI:13359273"
/db_xref="MALSMEFGFSIGSGFKAPNPPVLISASPNKINFTLRRRKKFFLL
RVSAVSYKEFAESALEETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLL
RSMAIENETMQVFDFAGFMEPBYDTPICANFTSTNVNIVVLUNFLHQLTDQTDQDYQ
DKYYNKIMSTYHKYAETPEWGGKLTGESIKFFSPLVMWTRESSSKEKHKALFSAFLEY
YQAWLLBMTIQVREEMEPSHVRANCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLR
DFLFNGVDELGTKTFIDYFPEYQTEDGTVSDKRSIIGKSYETRPWDLTGQFIG"
                          1086.
                                                                                                                                                                                                                                                     /organism="Arabidopsis
/db_xref="taxon:3702"
                                                                                                                                                                        /gene="HY2"
                                                                                                                                                                                                   /gene="HY2"
                                                                                                                                                                                                                          /gene="HY2"
                                                                                                                                                                                                                                                                                              ocation/Qualifiers
                                                                                                                                                           codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Mukougawa, K.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Frankenberg, N., Masuda, M., Yokota, A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                to mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                tor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             dq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               bp mRNA line
phytochromobilin
                                                                                                                                                                                                                                                                    thaliana"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             linear
                                                                                                                                                                                                                                                                                                                                                   Institute
Sciences;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               near PLN
synthase
                                                                                                                                                                                                                                                                                                                                                                                                                                                           synthase,
                                                                                                                                                                                                                                                                                                                                                      of Science
8916-5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  03-MAR-2001
HY2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1358
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2030
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1970
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1910
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δõ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       γQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Вþ
                                                                                                                                                                                                                                                                                                                                         DÝ
QÝ
                                                                                                                                                                                                                                                                                                                                                                                            B
                                                                                                                                                                                                                                                                                                                                                                                                                    Ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                     δÃ
                                                                    ₽
                                                                                      QΥ
                                                                                                                     DЬ
                                                                                                                                            δÔ
                                                                                                                                                                            밁
                                                                                                                                                                                                    δÃ
                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                    δÃ
                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                          Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches 1321;
                                           1053
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   153
                                                                                                                                                                                                                                                                                                                                                                                                                        633
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            573
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              513
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               453
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   393
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       333
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                213
                                                                                                                                                                                                                                 433
                                                                                                                                                                                                                                                                                     418
                                                                                                                                                                                                                                                                                                                                           358
                                                                                                                                                                                                                                                                                                                                                                    693
                                                                                                                                                                             456
                                                                                                                                                                                                                                                                                                               753
                                                                      530
                                                                                                                          516
                                                                                                                                                                                                       873
                                                                                                                                                                                                                                                            813
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          _
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AGAATCTTGCTTTTTTCAGTTTTCAGTATGAAGAAGAATTGAAGAGAGTGTCCGAGGAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TGTCGTATAAGGAATTCGCAGAGTCTGCTTTAGAAGAAACCAGGAAAAGGATCGTTCTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TTTCAATTGGGTCATGCTTCAAGGCACCAAACCCACCTGTTCTAATCTCTGCAAGCCCTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TTTCAATTGGGTCATGCTTCAAGGCACCAAACCCCACCTGTTCTAATCTCTGCAAGCCCTA
                                                                                                                                                                                                                                                                                                                                                                                                          TAATCACGAAACTGTTTCAGGAAAAGTATAGTAGCATGACAGGACTAGATGGTAAGACCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AACAAATAACTTTACTGTTATAGACTGCTTATATAAGTAAAAGTTCAGATTTTGTTTTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AACCTTCACATCTC--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AACCTTCACATCTCCAGGTATATGCAATTACATTTCGTTAGTGTAGTGGGAGGATTATAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AACTTCAAATGCTTGCTTTTAAATCTTCAAAGATTAGACTCTTGAGGGAGTATGGCAATAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TTCTCATTGTTTCTTGCTGTGAATTTTGGGTAAATTGATTTGAGTTGTCATTAGGAACCA 572
                                                                                    CAAACTGATGTTCAATATTTTACTGTATGTTCTTCTTTAGGGACCTTAATCCTTTGCATC
                                                                                                                                      AACATAGTTGTATTGTAAGTTATCTTCTAGTTATGCTGGAGTTATCAGGTCTGTATTGTC
                                                                                                                                                                                                                                                            CTTACTTTCAATTGATTGTTTGTATCTTCGCTTAGGTCTTTGACTTTGCGGGTTTC
                                                                                                                                                                                                                                                                                                                                            AACTTCAAATGCTTGCTTTAAATCTTCAAAGATTAGACTCTTGAGGAGTATGGCAATAG
                                AGTTGACTGACCAGACGGATTACCAAGACAAGTATTATAACAAGATAATGTCCATATATC
                                                                                                                                                                                                                                                                                       AGAATGAGACAATGC--
                                                                                                                                                                                                                                                                                                                AGAATGAGACAATGCAGGTTTAACTTCAGCAGTACAAACTGATTGCTTTAGTCCCATTTC
                   AGTTGACTGACCAGACGGATTACCAAGACAAGTATTATAACAAGATAATGTCCATATATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              434
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ø
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /gene="HY2"
/note="21 a
a 226 c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         26.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         þ
                                                                                                                                                                                                                                                                                                                                                                                                -CAGGAAAAGTATAGTAGCATGACAGGACTAGATGGTAAGACCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           nucleotides"
301 g 376
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Score 567.2;
Pred. No. 7.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2; DB 8;
7.5e-113;
hes 8;
                                                                                                                                                                                                                                      AGGTCTTTGACTTTGCGGGTTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1337;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                679;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 332
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      212
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       452
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   272
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     512
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           392
```

529

549

992 515 932 455

872 432 812

417 752 357 692

314

632 314 300

Qy Db		2133 AAATGTATTCGTCTCACCTAATCAACA 2160 
Query Ma Best Loc Matches	2132 1301	2073 AGTGTAGCTCTCAGCCCTTCATCAAAATGAGAATCCTCGAGTATGATATGATTTTAATGA :
BASE COUNT	2072	2013 TCTCAGGTCTATCTGCATTTCAAGATGATTGTTTGAGTTACCATGCATTGTAGTTTACA:
	2012 1181	1953 TCAACACAAGAGGACGTGAACTTAGGGAAGTAGGAATAAGAAAGA
	1952 1121	1893 TTAACAGGACAATTTAFCGGCTAACAATGATATATGTGAACAAGTCAGAGTTTCAGAGTCA
CDS	1892 1061	1833 GGAACTGTAAGCGATAAACGAAGTATCATTGGGAAGTCATATGAAACTCGTCCATGGGAT
FEATURES Sour	1832 1001	1773 GTGGATGAGTTAGGCACAAAAACATTCATTGATTACTTTCCAGAGTACCAAACAGAAGAT
	1772 941	1713 AGATGTTGAAAATGATTTGAACAAAATCAGGAGCTGCTAAGGGATTTCCTGTTCAATGGG
	1712 909	1653 AAAGGCAAAGGTATAAAAGATTTGATCCCATTAGTGTCCCCATTATTAATTA
	1652 901	ATTGATTTGGTGTTTGCAGGATCCTGGACATGGTCTTCTTAAAAGATTAGTAGGTGAAGC
COMMENT	858	859
JOURNAL	1592	1533 TTTCCTTTTGTGTAATTTGCATGTTTGAACAGACACTGTATCTGTATTGTTACAATGGAT
AUTHORS	1532 858	1473 AGAGCCAATTGTGAAGCACAACACAAGTACCTGACATGGCGAGCACAAAAGGTGATTTCA
TITLE JOURNAL	1472 809	1413 CTACAGGCATGGCTTGAGATGACAATCCAAGTGAGGAGGAGATGGAACCATCTCATGTG
REFERENCE	752	753
TITLE	1412	1353 TCAGCGGCCAAAAGCTAAGGTTTTATTGGAAACTTTGACTGAGAATCTATCATCTTCTTC
REFERENCE AUTHORS	1352 752	1293 TAGCAAAGAAAAAACATAAGGCTTTGTTCTCTGCGTTTCTAGAGTACTATCAGGTATATAC :
ORGANISI	1292 703	1233 ATTGACTGGTGAATCCATAAAGTTTTTCTCGCCTTTGGTGATGTGGACTAGGTTTTCGTC :
ACCESSION VERSION KEYWORDS	1232	1173 TGCTGAGGTGTAAATGACTGATCTTGAGATTTATTTGCAGACTTTCCCATGGGGAGGGA
RESULT 5 AY088874 LOCUS	1172 621	1113 ACAAATATGCTGAGGTGACCACAAGAATACACCAAATTACTCAATTGCAAGTAAACCTAA 1172           610 ACAAATATGCTG621

δ 밁 Š 밁 δ В δð В Š 밁 Š 밁 Ş 밁 S 밁 Š 밁 ő 밁 Ş Вp Š 밁 δÃ 밁 Š 밁 δ В δÃ 밁 Š 밁 δ

δõ

239 CTTGTTGTAATGGCTTTATCAATGGAGTTTTGGGTTTTCAATTGGGTCATGCTTCAAGGCA 298

```
žo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    rce
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MS
                                                                                                                                                                                                                                                               习
                                                                                                                                                                        Match
                                                                                                                  1293;
                                                            180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1308 bp mRNA linear PLN 2 Arabidopsis thaliana clone 98026 mRNA, complete sequence. AY088874 AY088874.1 GI:21407648 FLI CDNA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Malibu, CA 90265, USA
This clone sequence is one of 5,000 Ceres full-length cDNAs made available to TIGR and Genbank. The following quality assessment of this set was done by comparison with known proteins: two percent of the clones are estimated to be 5'-truncated; less than one percent are 3'-truncated; approximately two percent represent alternative splice variants, including unspliced introns and spliced exons; one
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    may contain polymorphisms when compared to sequences from Col-0. Genset carried out the library production and sequencing of the full-length clones. Ceres, Inc. carried out the clustering of the 5' sequences, selection of clones, and sequence assembly.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      percent may contain premature stop codons; five percent may have frame shifts in a coding region. A sequence is considered to be 5'-truncated if it lacks the translation initiation start (ATG). A sequence is considered to be 3'-truncated if it lacks the C-terminal end of the encoded protein. Please note that these cDNA sequences are derived from the Ws or LAer ecotypes and therefore
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Direct Submission Submitted (11-MAR-2002) Ceres, Inc, 3007 Malibu Canyon Road
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Full-Length
Unpublished
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Genome Biol. (2 2 (bases 1 to
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Haas, B.J., Volfovsky, N., Town, C.D., Troukhan, M., Alexandrov, N., Feldmann, K.A., Flavell, R.B., White, O. and Salzberg, S.L.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Arabldopsis thaliana
Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots;
Rosidae; eurosids II; Brassicales; Brassicaceae; Arabidopsis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Brover, V., Troukhan, M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Feldmann, K
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Brover, V., Troukhan, M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             annotation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Full-length messenger RNA sequences
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Feldmann, K.
                                                                                                                                             Similarity
(bases 1 to 1308)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (bases 1 to 1308)
                                                                                                                                                                                                                                                               414
                                                                                                                  Conservative
                                                                                                                                                                                                                                                               D
                                                                                                                                                                                                                                                         /product="unknown"
/protein_id="aaM67180.1"
/protein_id="aaM67180.1"
/db_xref="g01:21518130"
/translation="MEFGFSIGSCFKAPNPPVLISASPNKINFTLRRNKRFLLRVSA
/translation="MEFGFSIGSCFKAPNPPVLISASPNKINFTLRRNKRFLLRVSA
/translation="MEFGFSIGSCFKAPNPPVLISASPNKINFTCSCKTRLLASMAIE
NETMOVFDFAGAFMEPEVDFFFTCANFTTSTNVNIVVLDLNPLHOLTDODVDKYNK
IMSIYHKYAETFPWGGKLTGESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLE
MTIQVREEMEPSHYRANCEAGHKYLTWRAQKDPGHGLKRLVGEAKAKELLRDFLFNG
VDELGTKTFIDYFPEYGTEDGTYSDKRSIIGKSYETRPWDLTGQFIG"
VDELGTKTFIDYFPEYGTEDGTYSDKRSIIGKSYETRPWDLTGQFIG"
1266 c 296 g 372 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /organism="Arabidopsis thaliana"
/db_xref="taxon:3702"
/clone="98026"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ocation/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             cDNA from
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (2002) In
to 1308)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        .1053
                                                                                                                                          24.3%;
                                                                                                               0
                                                                                                            Score 525.2; DB 8; Pred. No. 9.9e-104; D; Mismatches 3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Arabidopsis thaliana
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            press
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Alexandrov, N., Lu, Y.-P.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Alexandrov, N., Lu, Y.-P., Flavell, R. and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     greatly improve genome
                                                                                                                                                                  Length 1308;
                                                                                                                  Indels 686;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Flavell, R.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PLN 27-JUN-2002
                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         and
```

0y 0y	Oy Oy Db	0 Db 4	OV Db	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
1199 AGATTTATTTGCAGACTTTCCCATGGGAGAGGAAATTCACTGGTGAATCCATAAAGTTTT 1258  1191		ATTCTGTGCTAACTTATCAGGTCTGTATTGTCCAAACTGATGTTCAATATTTTACTGT 101  ATGTTATGCTGGAGGTTATCAGGTCTGTATTGTCCAAACTGATGTTCAATATTTTACTGT 101  ATGTTATGCTGGAGGTTATCAGGTCTGTATTGTCCAAACTGATGTTCAATATTTTACTGT 107  ATGTTCTTCTTTAGGGACCTTAATCCTTTGCATCAGTTGACCAGACGGATTACCAA 107  ATGTTCTTCTTTAGGGACCTTAATCCTTTGCATCAGTTGACTGAC	779 CAGCAGTACAAACTGATTGCTTTAGTCCCATTTCCTTTCCATTGATTG	GCTTATATAAAGTTAAAAGTTCAGATTTTTGTTTTTCTAATCACGAAACTGTTTCAGGAAAAG	
ACCESSION AV128900 VERSION AV128900.1 GI:22136443 VERSION AV128900.1 GI:22136443 KEYWORDS FLI_CDNA. SOURCE Arabidopsis thaliana ORGANISM Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae; eurosids II; Brassicales; Brassicaceae; Arabidopsis. REFERENCE 1 (bases 1 to 1092)	Db 1296 CA 1297  RESULT 6  AY128900  AY12800  AY12800  AY12800  AY12800  AY12800  AY12800  AY12800  AY1280	Db 1116 GAAGTAGGAATAAGAAGAGGAGCAGGAGGAGCATGAAGGAGCATCACCAGACCATACCAGACCATCAAGAGAAGAAGAGGAGGAGGAGGAGGAGGAGGAGGAGGA		QY 1679 CCCATTAGTGCCCATTATTAATTAGCTTGTGAAGATGTTGAAAAATGATTTGAACAAAA 1750  Db 878	698 1379 721 1439 744 1499 804 1559 827 1619

Query Mat Best Loca Matches 1 Qy Db Qy Qy Qy Qy Db Db	BASE COUNT	gene CDS	FEATURES Source		AUTHORS TITLE JOURNAL COMMENT
Query Match  15.9%; Score 343; DB 8; Length 1092; Best Local Similarity 61.7%; Pred. No. 3.7e-64; Matches 1092; Conservative 0; Mismatches 0; Indels 679; Gaps 7;  248 ATGGCTTTATCAATGGAGTTTGGGTTTTCAATTGGGTCATGCTTCAAGGCACCAAACCCA 307	/codon_start=1 /product="unknown_protein" /product="unknown_protein" /protein_id="AAM91300.1" /db_xref="G1:22136444" /translation="MALSMEFGFSIGSCFKAPNPPVLISASPNKINFTLKRRKKRFLL/translation="MALSMEFGFSIGSCFKAPNPPVLISASPNKINFTLLRRKKRFLL/translation="MALSMEFGFSIGSCFKAPNBPVLIDLMSTELOMLAPKSSKIRLL RSAVIEMEFMOVEDFAGFMEPEYDTPIFCANFFTSTNVNIVVLDLNPLHOLTDQTDYO DKYYNKLMSIYHKYAETFPWGGKLTGESIKFFSPLVMWTRFSSKEKHKALFSAFLEY YQAWLENTIOVREEMEPSHVRANCEAQHKYLTWRAQKDFGHGLLKRLVGEAKAKELLR DFLFNCVDELGTKTFIDYFPEYQTEDGTVSDKRSIIGKSYETRPWDLTGQFIG" 352 a 194 c 253 g 293 t	PCR product using RIKEN clone RAFL09-83-B22 (AY099706) as a template ecotype: Columbia"  1. 1092 //gene="At3g99150"  1. 990 1. 990 1. 990 1. 990	Tripp,M, (SSP/Stanford) and Seki,M. (RIKEN GSC) contributed to this work. Shinozaki,K. (RIKEN GSC) and Davis,R.W. (SSP/Stanford) contributed equally to this work as PIs. Location/Qualifiers 1. 1092 //organism="Arabidopsis thaliana" //ob_xref="taxon:3702" //chromosome="3" //clone="UJS336"	Satou, M., Kamiya, A., Sakurai, T., Carninci, P., Kawai, J., Hayashizaki, Y. and Shinozaki, K.  The Salk, Stanford, PGEC (SSP) Consortium members constructed and sequenced the pUNI (ORF) clones using the RAFL cDNAs: Tripp, M., Nguyen, M., Southwick, A., Karlin Neumann, G., Lam, B., Miranda, M., Palm, C.J., Bowser, L., Jones, T., Banh, J., Chen, H., Cheuk, R., Chung, M.K., Kim, C., Lin, J., Liu, S.X., Pham, P.K., Sakano, H., Shinn, P., Yamada, K., Ecker, J., Theologis, A. and Davis, R.W.	iranda,M., hen,H., ,A., ,R., ,R., ,R., ada,K., ada,K., ca 94304, ch 94304, ch 1750
\$ \$ \$ \$ \$ \$ \$ \$ \$	D Q D Q D Q	Qy Qy Db	ор Оу Оу	δ	р Оу Оу Оу Оу Оу Оу Оу Оу Оу Оу О
1268 TGGTGATGTGGACTAGGTTTTCGTCTAGCAAAGAAACATRAAGCTTTGTTCTTTGTCTTTTGTTTTTTTTTT	88 TATAACAAGAIAATGTCCATAIATCACAAATAIGCTGAGGTGACCACAAGAATACACCAA	68 CTGGAGTTATCAGGTCTGTATTGTCCAAACTGATGTTCAATATTTTACTGTATGTTCTTC 35	338	668 ATGACAGGACTAGATGGTAAGACCGAACTTCAAATGCTTGCT	

```
Ωy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ρ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       δõ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ρy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         뭥
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           В
                                                                                                                                                                                                 REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                              REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT 7
ATAC009326/c
                                                                                                                                                                                                                                                                                              REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DEFINITION
                                                                                                                                 COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Pocus
                                                                                                                                                                                                                                                             AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                            TITLE
JOURNAL
                                                                                                                                                                                TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                               ORGANISM
                                                                                                                                                                                                                                                JOURNAL
                                                                                                                                                                JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1628
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1988
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1748
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1808
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1868
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            782
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            764
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            750
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             822
                                                                                                                                                                                                             Lin,X. and Kaul,S.
Direct Submission-1999) The
Submitted (16-AUG-1999) The
Medical Center Dr. Rockville
3 (bases 1 to 85561)
                                                                                                                                                                                                                                                                                                                            Ronning,C.M., Koo,H., Fujii,C.Y., Utterback,T.R., Barnstead,M.E., Bowman,C.L., White,O., Nierman,W.C. and Fraser,C.M. Arabidopsis thaliana chromosome III Pl MZB10 genomic sequence
                                                                                                                                                                                                                                                                                                                                                                                                             Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae; eurosids II; Brassicales; Brassicaceae; Arabidopsis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               complete sequence. AC009326
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ATACO09326 85561 bp DNA linear PLN 24-JAN Arabidopsis thaliana chromosome III P1 MZB10 genomic sequence.
                                                                                                                                                 Submitted (24-JAN-2001) The Institute for Genomic Research, Medical Center Dr., Rockville, MD 20850, USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                               Arabidopsis thaliana.
Arabidopsis thaliana
                                                                                                                               Medical Center Dr., Rockville, MD 20850, USA
on Jan 24, 2001 this sequence version replaced gi:12280842
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AC009326.8 GI:12408713
P1 clone MZB10 is from Arabidopsis chromosome molecular marker CIC7A12.
                                e-mail: xlin@tigr.org
                                                Rockville, MD 20850,
                                                              9712 Medical Center Dr.
                                                                                                              Address all correspondence
                                                                                                                                                                              Direct Submission
                                                                                                                                                                                                                                                                                                            Unpublished
                                                                                                                                                                                                                                                                                                                                                                            Lin, X., Kaul, S., Town, C.D.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CTGTATCTGTATTGTTACAATGGATATTGATTTGGTGTTTGCAGGATCCTGGACATGGTC 1627
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TTCTTAAAAGATTAGTAGGTGAAGCAAAGGCAAAGGTATAAAAGATTTGATCCCATTAGT 1687
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ATGGCGAGCACAAA-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ATAAGAAAGAGCAGCATGAGGAGTCTCTCAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GTGAACAAGTCAGATTTCAGAGTCATCAACACAAGAGGACGTGAACTTAGGGAAGTAGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GTCATATGAAACTCGTCCATGGGATTTAACAGGACAATTTATCGGCTAACAATGATATAT 1001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GTCATATGAAACTCGTCCATGGGATTTAACAGGACAATTTATCGGCTAACAATGATATAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CTTTCCAGAGTACCAAACAGAAGATGGAACTGTAAGCGATAAACGAAGTATCATTGGGAA 1867
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GTCCCCATTATTAATTAGCTTGTGAAGATGTTGAAAATGATTTGAACAAAATCAGGAGCT 1747
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TTCTTAAAAGATTAGTAGGTGAAGCAAAGGCAA----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GTGAACAAGTCAGATTTCAGAGTCATCAACACAAGAGGACGTGAACTTAGGGAAGTAGGA
                                                                                                                                                                                                                                                                                                                                                                                            (bases 1 to 85561)
                                                                                                                                                                                                                                                                                                bases 1 to 85561)
                                                                                 Institute for Genomic
                                                                                                                                                                                                                                  Rockville,
                                                  USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               85561 bp
                                                                                  Research
                                                                                                                   6
                                                                                                                                                                                                                                Institute foe, MD 20850,
                                                                                                                                                                                                                                                                                                                                                                               Benito, M. -I.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1092
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2018
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              -----AGGATCCTGGACATGGTC
                                                                                                                                                                                                                                  for Genomic Research,
), USA, xlin@tigr.org
                                                                                                                                                                                                                                                                                                                                                                              Creasy, T.H., Haas, B.
                 III and is
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PLN 24-JAN-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              -AGGAGCT
                 near
                                                                                                                                                                                                                                                   9712
                    the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                821
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1061
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                941
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1987
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1927
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                814
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                763
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FEATURES
                                                                                                                                                                                                                                                                                                                                   gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              source
                                                                                                                                                                                                                                                                    mRNA
                                                                                                                                                                                                                                     CDS
```

```
misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     misc_teature
                                                                                                   misc_feature
                                                                                                                                                                                                                                                                   misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         their annotation. Genes with similarity to other proteins are named after the database hits. Genes without significant peptide similarity but with EST similarity are named as 'unknown' proteins. Genes without protein or EST similarity, that are predicted by more than two gene prediction programs over most of their length are annotated as 'hypothetical' proteins. Genes encoding tRNAs are predicted by tRNAscan-SE (Sean Eddy, predicted by tRNAscan-SE (Sean Eddy, predicted by tRNAscan-SE (Sean Eddy, predicted by tRNAscan-SE (Sean Eddy, predicted by tRNAscan-SE (Sean Eddy, predicted by tRNAscan-SE (Sean Eddy, predicted by tRNAscan-SE (Sean Eddy, predicted by tRNAscan-SE (Sean Eddy, predicted by tRNAscan-SE (Sean Eddy, predicted by tRNAscan-SE (Sean Eddy, predicted by tRNAscan-SE (Sean Eddy, predicted by tRNAscan-SE (Sean Eddy, predicted by tRNAscan-SE (Sean Eddy, predicted by tRNAscan-SE (Sean Eddy, predicted by tRNAscan-SE (Sean Eddy, predicted by tRNAscan-SE (Sean Eddy, predicted by tRNAscan-SE (Sean Eddy, predicted by tRNAscan-SE (Sean Eddy, predicted by tRNAscan-SE (Sean Eddy, predicted by tRNAscan-SE (Sean Eddy, predicted by tRNAscan-SE (Sean Eddy, predicted by tRNAscan-SE (Sean Eddy, predicted by tRNAscan-SE (Sean Eddy, predicted by tRNAscan-SE (Sean Eddy), predicted by tRNAscan-SE (Sean Eddy, predicted by tRNAscan-SE (Sean Eddy), predicte
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Genes were identified by a combination of three methods: Gene prediction programs including GRAIL (available by anonymous ftp from arthur.epm.ornl.gov), Genefinder (Phil Green, University owashington), Genscan (Chris Burge,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (http://www.cbs.dtu.dk/netpgene/cbsnetpgene.html), searches of the complete sequence against a peptide database and the Arabidopsis EST database at TIGR (http://www.tigr.org/tdb/at/at.html). Annotated genes are named to indicate the level of evidence for the complete that the complete the complete that the complete the complete that the complete the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the complete that the co
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          http://ftp.genome.washington.edu/RM/RepeatMasker.html). Regions of genomic sequence that are not annotated as genes but have predicted exons by GRAIL are annotated as misc features.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        The orientation of the sequence is from SP6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        http://gnomic.stanford.edu/~chris/GENSCANW.html), and NetPlantGene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           dentified by repeatmasker (Arian Smit,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /genome.wustl.edu/eddy/tRNAscan-SE/). Simple repeats are
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /note="exon predicted by xgrail, complement(507..681)
/note="exon predicted by xgrail, excellent_shadowexon"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /note="exon predicted by xgrail, complement(1682..1731) /note="exon predicted by xgrail, marginal_shadowexon".
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /note="exon predicted by xgrail, complement(1516. 1602) /note="exon predicted by xgrail, marginal_shadowexon"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /organism="Arabidopsis thaliana"
/oultivar="Columbia"
/db_xref="taxon:3702"
/chromosome="III"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      complement(1852.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1508. .1606
marginal_shadowexon"
                                                                                                   complement(3372.
                                                                                                                                                          marginal_shadowexon"
                                                                                                                                                                                                                                                                   complement(3284. .3360)
                                                                                                                                                                                                                                                                                                                PORNSYLDDYYLVDKFCLKDYKFARGDVVVFSSPTHFGDRYIKRIVGMPGEWISSSRD
VIRVPEGHCWVEGDNKTSSLDSRSFGPIPLGLIOGRVTRVMWPPQRISKIGR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SUBUNIT 2 GB:P46972 [Saccharomyces cerevisiae]"
join(<2185, .2338,2432, .2504,2922, .3081,3204,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1854.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /note="exon predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1655.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /note="exon predicted by
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /clone="MZB10"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /map="CIC7A12"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /product="putative signal peptidase"
/protein_id="AAD56314.1"
/db_xref="GI:5923663"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  joın(2185. .2338,2432. .2504,2922. .3081,3204.
/gene="MZB10.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /gene="MZB10.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /note="exon predicted by
                                                            /note="exon
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           note="similar to MITOCHONDRIAL INNER MEMBRANE PROTEASE"
                                                                                                                                                                                                                  note="exon predicted by
                                                                                                                                                                                                                                                                                                                                                                                                                                         translation="MGIQNILWQVAKKSFTGSIIGLTISDRCCSVVPVRGDSMSPTFN"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           codon_start=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             . 85561
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       .1171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             .1933
                                                            predicted
                                                                                                                    .3486)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      .1922)
                                                       γd
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          bу
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 xgrail, quality marginal"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     xgrail,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          xgrail,
                                                                                                                                                                                                                       xgrail,
                                                            xgrail, quality
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     quality good"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                quality
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              quality excellent"
                                                                                                                                                                                                                  quality
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     quality
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          quality
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              quality marginal"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              quality
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  quality marginal"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ç
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              т7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              end of the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     good_shadowexon"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        .>3281)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Pl
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       e
f
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            the
```

```
mRNA
                                                                                                    gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               gene
                                                                                                                                            misc_feature
                                                                                                                                                                                                      misc_teature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /note="exon predicted by xgrail, excellent_shadowexon" complement(6084.6095) /note="exon predicted by xgrail, marginal_shadowexon"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /note="exon predicted by xgrail, complement(6418. 6474)
/note="exon predicted by xgrail, excellent_shadowexon" complement(6632. 6705)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     marginal_shadowexon"
complement(3922...409
                                                                                                                                                              marginal_shadowexon"
                                                                                                                                                                               complement(10821. .10843)
/note="exon predicted by xgrail,
                                                                                                                                                                                                                                                                                                    TPTRRSTTPTTSTSRPVTTRASNSRSSTPTSRATLTAARATTSTAAPRTTTTSSGSAR
SATPTRSNPRPSSASSKKPVSRPATPTRRPSTPTGPSIVSSKAPSRGTSPSPTVNSLS
KAPSRGTSPSPTLNSSRPWKPPEMPGFSLEAPPNLRTTLADRPVSASRGRPGVASAPG
                                                                                                                                                                                                                                                                                                                                                             /protein_id="AAD56316.1"
/db_xref="G1:5923665"
/db_xref="G1:5923665"
/translation="MLTHDRDEELSLFLEMRRREKEHRADSLLTGSDNVSINATLTAA
/translation="MLTHDRDEELSLFLEMRRSDYDWLLTPPGTPOPEKESHRSVM
AAAALSGVSETASSORVFLRRTAAENFLYSENEKSDYDWLLTPPGTPOPEKESHRSVM
NQHDAPNSRPTYLKSRLGNCREDIVSGNNNKPQTSSSSVAGLRRPSSSGSSRSTSRPA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /note="exon predicted marginal_shadowexon"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /product="Yippee-like protein"
/protein_id="AAD56315.1"
/protein_id="AAD56315.1"
/db_xref="G1:5923664"
/translation="MCRLFVIDLEGLVYSCKYCQTHFAVTNDIISKSFHCKHGRAYLF
/translation="MCRLFVIDLEGLVYSCKYCQTHFAVTNDIISKSFHCKHGRAYLF
DNVNNTVGEKEHRVMITGWHTVADIFCVSCGSLVGWKYEIAYDKSQKYKEGKFILER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GB:AAD47882 [Homo sapiens]"
join(<4496. .4591,5070. .5113,5199.
/gene_MZB10.2"
                                                                                                    /note="exon predicted by xgrail, quality marginal"
<11221. .>12992
                                                                                                                                                                                                                                          NLSPYAMGNKMVERVVNMRKLGPPRLTENGGRGSGKSSSAFNSLGYGRNLSKSSIDMA
IRHMDIRRGMTGNLRPLVTKVPASSMYSVRSRPGSVSSSPVATSSTVSSSDPSVDNIN
                                                                                                                                                                                                                                                                                  SRSGSIERGGGPTSGGSGNARRQSCSPSRGRAPIGNTNGSLTGVRGRAKASNGGSGCD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          complement(5641.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          complement(5490.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    complement(3872. .3962)
                                                                                                                                                                                                                       ILCLDGNEAENDDLLSERSYAASPRNQYPKFTS"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         join(4496. .4591,5070. .5113,5199.
/qene="MZB10.2"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /note="exon predicted by xgrail, quality
                                                        /note="similar to receptor kinase GB:S70769 [Arabidopsis
                                                                           /gene="MZB10.4"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /note="exon predicted by xgrail,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /gene="MZB10.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    'note="hypothetical protein"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         'gene="MZB10.3"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 oin(6920.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    'gene="MZB10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 note="similar to unknown protein GB:AAB95292 [Arabidopsis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        'gene="MZB10.3"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ln(<6920.
(<11221. .11263,11488. .1:
8. .12448,12597. .>12992)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  _family="(GAAAA)n"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                _tamily="(GA)n"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             "similar to Yippee putative zinc binding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               .7010,7097.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           .7010,7097.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          .5725)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       .4055)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   by xgrail,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 .7253,7541.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           .7253,7541.
                    .11600,11690. .11900,11982. .12219,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              quality excellent
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      quality
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        quality
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   quality
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   quality
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         quality
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 .7646,7762.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          .5307,5386.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              .5307,5386.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           .7646,7762.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             excellent"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          .5463)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                .>5463)
                                                                                                                                                                                                                                          JOURNAL
REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AP003735/c
LOCUS
                                                                                                                                                                                                                                                                                                                                        REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               δĀ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    В
                                                                                                  COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /ERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local Similarity
Matches 179; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                            ORGANISM
                                                                                                                                                                                                                       TITLE
                                                                                                                                                                                                                                                                                                                       TITLE
                                                                                                                                                                                                  JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           21717
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      21831
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           21777
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1606
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1487
                                                                                                                                                                                                                                                                                                    clone: B1147A04
                                                                                                                                                                                                                                                                                  Published Only
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AP003735
(ftp://ncbi.nlm.nih.gov/blast/db) and the cDNA sequence database at
```

```
Submitted (13-JUN-2001) Takuji Sasaki, National Institute of Agrobiological Sciences, Rice Genome Research Program; Kannondai 2-1-2, Tsukuba, Ibaraki 305-8602, Japan (E-mail:tsasaki@nias.affrc.go.jp, URL:http://rgp.dna.affrc.go.jp/, Tel:81-298-38-7441, Fax:81-298-38-7468) on Mar 12, 2002 this sequence version replaced gi:16904696. Genes were predicted from the integrated results of the following: GENSCANI.0, BLASTNZ.0, BLASTNZ.0 as well as SplicePredictor (October 1998 version). The genomic sequence was searched against NCBI NonRedundant Protein database, or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Oryza sativa (japonica cultivar-group)
Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; Liliopsida; Poales; Poaceae;
Ehrhartoideae; Oryzeae; Oryza.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Oryza sativa (japonica cultivar-group) BAC clone:B1147A04.
                                                                                                                                                                                                                                                                                                                                      2 (bases 1 to 150053)
Sasaki,T., Matsumoto,T. and Yamamoto,K.
                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sasaki,T., Matsumoto,T. and Yamamoto,K. Oryza sativa nipponbare(GA3) genomic DN
                                                                                                                                                                                                                                                                                                                Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Oryza sativa (japonica cultivar-group) (cultivar:Nipponbare) DNA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TGAGACGAAAATCCAAGTGAAGGAAGGAGGGATCCATCGAA--GGAGACCCAATT----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TTGCAGGATCCTGGACATG--GTCTTCTTAAAAGATTAGTAGGTGAAGCAAAG 1656
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TTTGTGCATGTTTGAACAGACACTGTATCTCTATCGTTACAGTAAATCTTG-TTTGTTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AATTTGCATGTTTGAAGAGAGACACTGTATCTGTATTGTTACAATGGATATTGATTTTGGTGT 1605
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TGAGATGACAATCCAAGTGAGGGAGGAGGATGGAACCATCTCATGTGAGAGCCAATTGTGA 1486
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TGGCAGGAATGTGGACTTGGTGTTTTTACAAAACTAGTTGGTGTAAGAGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AGCACAGTACAAATATCTGACATGGCGAGAACAAAAGGTGATTTAATTTCCTTTGTGTAA 21718
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AGCACAACACAAGTACCTGACATGGCGAGCACAAAAGGTGATTTCATTTTCCTTT-TGTGT 1545
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GIGLRYGQGGSSQESSSTQRDKGKSSAVPQGSTSNSNISFQSITELAPR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /translation="MCNGSDRLGQREAEEICTNNVRVFSYNSLRSATDSFHPTNRIGG
GGYGVVFKGVLRDGTQVAVKSLSAESKGTREFLTEINLISNIHEVLFKLIGCCIEG
NNRILVYEYLENNSLASVLLGGSRSRYUPLDWSKRAALCVGTASGLAFLHEEVEPHVH
RDIKASNIILLDSNFSPKIGDFGLAKLFPDNVTHVSTRVAGTVGYLAPEYALLGQLTKK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        <14213.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /gene="MZB10.5"
/note="similar to
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EVTRFIKVALFCTQAAAQKRPNMKQVMEMLRRKELNLNEDALTEPGVYRGVNRGRNHR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ADVYSFGILVLEVISGNSSTRAAFGDEYMVLVEWVWKLREERRLLECVDPELTKFPAD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /product="putative receptor ser/thr protein kinase"
/protein_id="AAD56317.1"
/db_xref="GI:5923666"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        join(11221.
12298. .124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /gene="MZB10.4"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /codon_start≈1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GI:19386808
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              4.3%;
                                                                                                                                                                                                                                                                                                                                                                                                         in Database (2001)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1221. .11263,11488. .11600,11690. .11900,11982. .12219,
_.12448,12597. .12992)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score 92.6;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             L50053 bp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      hypothetical protein GB:AAC27164
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              4.1e-10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DB 8;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DNA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              genomic DNA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 85561;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 chromosome 1,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PLN 13-MAR-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       21606
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        21659
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 21778
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     <u>ن</u>
```

```
FEATURES
                                                        CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            gene
                                                                                                                                                                                           gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          the identified cDNA sequences using BLASTN 2.0 with the corresponding DDBJ accession no. and Rgp clone ID. A gene with identity or significant homology to a protein is classified based on the protein name to indicate the homology level such as same name, 'putative-' and '-like protein'. A gene without significant homology to any protein but with EST homology (covering almost the entire length of partial sequence) is classified as an 'unknown' protein. A gene predicted with a gene prediction program is classified as a 'hypothetical' protein.
The orientation of the sequence is from M13rev to -21M13 of the BAC clone. This sequence of B1147A04 clone has an overlap with p0431G06 (DDBJ: AP003683) clone at the position 141,300 to 142,270 of 'end. The sequence of this clone ends at the position 8,754 of p0431G06. Detailed information on overlap and assembly quality together with annotation of this entry is available at http://rgp.dna.affrc.go.jp/GenomeSeq.html.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Protein homologies of the coding regions were searched against NonRedundant Protein database with BLASTP2.0. ESTs represent
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                4632. .4750,4830. .5006,5081. .5155))
/gene="B1147A04.2"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /gene="B1147A04.3"
join(7327. .7477,8191. .8507,8585.
/gene="B1147A04.3"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /protein_id="BAB86188.1"
/protein_id="BAB8618.1"
/db_xref="GI:19386810"
/translation="MVGRGIDPRIDPLAPGSPLVPVGSDRNPYVDLYGMTKRRRQTS
GTTYALCVSSAGRRRYMINAIIISSICVRTPCRAAARVFVLPGMQSSIIQSVVNCPAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /translation="mikyhkekikatkivirkflilipveagqisvcscmpasgiqhs
Lfymysvqlytscrvltyipvatathacpastrlah"
complement(join(2478. . .2681,2738. . .2961,4410. .4618,
                            complement(join(10608. 15809. .15855,16152. .1
                                                                                                         15809. .15855,16152. .16202,17629.
18703. .18807,18902. .18965,19771.
20654. .20751,22249. .22402,23005.
                                                                                                                                                                                        complement(join(10608.
                                                                                                                                                                                                                                                                        GTAHATKRLDDLSHPIAAAVVKTYYVQMRRMHAHCVVTSCMQAAPRWMDRWSTLLRWA
                                                                                                                                                                                                                                                                                                 /translation="mpmhCRQAAVADEMEARSHRIRIDQLVVVARARFPISHGAARTI
TCPAACVSRPVNLYRGKSCCLPYLDRPRHLTYSCRGKTSIDRSIDQPTLFTTPSTHPP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ALIDRDPSPNPIIPGVVVGGGVYTLYSTMLDAADTRPPPPFPPKSLLMSTNAPSPIEH
ADDQAPNGTDQDRTMWACSYPSRPRKSMPGPMRMSSFAIDPLGIGDRSTQTTYRACQS
                                                                                  /gene="B1147A04.4"
                                                                                                                                                                                                                                              LIVMSLLLTFCRPGPLSRLVSSPARRYNDDARNRCISTTRYNAAMPGFSTTSRAREAD
                                                                                                                                                                                                                                                                                                                                                          /protein_id="BAB86189.1"
/db_xref="GI:19386811"
                                                                                                                                                                                                                                                                                                                                                                                                                                          /note="hypothetical protein"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      join(7327.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RSFSNVYAPFAGMSVPRKAHTVLAELAVKFQCGLTRTLARHVVVLHRTYKDPFNAITT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        VQQNRCHSQLATYYYASHLLHCCYACTAMQRDPISIDRSGQAKPARALAVASHALAAS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /note="hypothetical protein"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              4632. .4750,4830. .5006,5081. .5155))
/gene="B1147A04.2".
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /protein_id="BAB86187.1"
/db_xref="GI:19386809"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /note="hypothetical protein"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1278. .1520
/gene="B1147A04.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /gene="B1147A04.1"
1278. .1520
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /cultivar="Nipponbare"
/db_xref="taxon:39947"
/chromosome="1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               organism="Oryza sativa (japonica cultivar-group)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   'clone="B1147A04"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 .15005
  18807,18902.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      .7477,8191. .8507,8585.
8. .10810,11617.
.16202,17629. .1
.18965,19771. .1
7. .11717,14329. .14407
.17645,17914. .17999,
.19832,20405. .20567,
                                                                                                                                     .17645,17914.
.19832,20405.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                .8779)
                                                                                                              .23143,23829.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      .8779)
                                                                                                                                                                                        .11717,14329.
                                                                                                      29. .14407,
.17999,
.20567,
.24196))
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          gene
                                                        CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                          CDS
                                                                                                                                        gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LTR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LTR
```

```
/gene="B1147A04.6"
complement(32547. .34495)
/gene="B1147A04.6"
/gene="B1147A04.6"
                                                                                                                                                                                                                                                                                                                                                                                     54171. .54785
/gene="B1147A04.8"
54171. .54785
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /gene="B1147A04.5"
25762. .31913
                                                                                                                                                  /protein_id="BAB86191.1"
/db_xref="GI:19386813"
/db_xref="GI:19386813"
/translation="MKLSIQSFARKLSLPSPKRTWSSGGGSSKRDGGMSKNGSGVKRA
/translation="MKLSSIQSDALMARSTPRSYLPAELSRRELEAVLRRLGHGEPDDE
ISRSBASSFASASSSESSSDDALMARSTPRSYLPAELSRCHAVAILGGDGDGCSL
ELDAVAAIAAEAEAGGGEDELMEAFKVFDADGDGRITAEELRGVMVAILGGDGDGCSL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /pseudo
45943. .
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            complement(44492. .45414)
/gene="B1147A04.6"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    complement(36287. .43479)
/gene="B1147A04.7"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /note="hypothetical protein
similar to Arabidopsis thaliana chromosome 4,
complement(join(58262.59432...59526,59957...6
                                              59432. .59526,59957. .60076,60648. .60767))
/gene="B1147A04.9"
                                                                                                    DDCRWIGGVDADGGFVGFQDFARMMAATATATATADGPRSW*complement(join(58262..58450,58741..58845,59228.
                                                                                                                                                                                                                                                                                                            /note="contains ESTs AU057399(S21412),AU057400(S21412)
unknown protein"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /gene="B1147A04.6"
/note="nrob-"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           similar to Oryza sativa chromosome
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        complement(36287. .43479)
/gene="B1147A04.7"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         similar to polyprotein"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DGYFIWSYMIWSLMISISAMNDGYRLRFYMIELFMSEPMYGRYLNRGATYMEYSLRRI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FADRCTILSFWGECSIGASTLIQRHRRLCNIAYYSLDKFKEIVRFYLATYMSKYWQLT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    VSGYRNKDKLNKLWNDVVANPQDWTDNRPQKKNGSINAKYPDFKNNVSKEALWLDTAP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GRFSAVSVLVQDRHADYPKFWIPIIFQDDLAQVAASHLQEKDHIYVSGQLTGDIPPTK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                20654. .20751,22249.
/gene="B1147A04.4"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  similar to Oryza sativa chromosome 1, P0492F05.19"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                pseudogene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         pseudogene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   similar to Oryza sativa chromosome
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       pseudogene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     VVVAVPVASWSS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LSTAHVRRSTWWCMGAVASRHVQHRTPTSRTVARVRGACGWLELFVVSSSQCAVLLVI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NRKKGALFRANLEQPESGMILSLEMDGIDNPDVHLSTYCKEDLCYYLLDAGFQCLIHI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 KAVLEKLDDLVFSSDFSAAKKYRPFGGDKGNGELWQDLVDNPGKWWDNRSDKLLFSVF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LMDGQANIQVLAQMLSFVGGKAVQADSMVDEEEGFMQIVEAEKKVETKKFIPKYPPRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PAAVEGEGEEERGPGWQREKLPAEIPRPSTIAFQPRVANAVRLVGTVGAPVQLQRLPD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /protein_id="BAB86190.1"
/db_xref="GI:19386812"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /note="3/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /note="probably
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /pseudo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /note="probably inactive due to frameshift(s) in CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /pseudo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /pseudo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /note="probably inactive
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /gene="B1147A04.5"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               note="5' LTR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          codon_start=
                                                                                                                                                                                                                                                                                       /codon_start=[
                                                                                                                                                                                                                                                                                                                                                                     /gene="B1147A04.8"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    note="probably inactive due to frameshift(s) in CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 translation="MRHLARLLNNRILLPASSSPAAAFSKRTYARRTKPAPPTADAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            .31913
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  .46912
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            25674
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         inactive due to frameshift(s) in CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              .22402,23005. .23143,23829. .24196))
.60076,60648.
                             58450,58741.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  due to frameshift(s) in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1, P0684B02.19"
     .60767))
                           .58845,59228. .59321
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         P0492F05.19"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                At4g20010"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CDS
```

SG

```
RESULT 9
166494/c
LOCUS
DEFINITION
ACCESSION
VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Matches 278;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      gene
                                                                                                                                                                   59049
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1026
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    910
                                  Sequence
166494
166494.1
     Unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AGGTCTTTGACTTTGCGGGTTTCATGGAGCCTGAGTATGATACTCCCATATTCTGTGCTA
                                                                                                                                                                                                CATAAGGCTTTGTTCTCTGCGTTTCTAGAGTACTATCAGGTA 1347
                                                                                                                                                                                                                                                       TCCATAAAGTTTTTCTCGCCTTTGGTGATGTGGACTAGGTTTTCGTCTAGCAAAGAAAA
                                                                                                                                                                                                                                                                                                  CGATATCTTTATTTAGAGGATATGCAGCTTCTTCCTTGGGGTGGCAAGATTACGAGTGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                 CAAGGATTACAAAGATAAGTACTATAGGAGTATAATGCCTCTTGTACACAAGTATAACGA
                                                                                                                                                                   CACCATGTTCTACATTCAGCTTTCGTGGATTATTATAAGGCA 59008
                                                                                                                                                                                                                                    TCATTGAAGTTCTTCTCTCCAATTGTGATCTGGACAATATTTGAGTCAACTGAACACAAC
                                                                                                                                                                                                                                                                                                                       ATGACTGATCTTGAGATTTATTTGCAGACTTTCCCATGGGGAAAGGGAAATTGACTGGTGAA
                                                                                                                                                                                                                                                                                                                                                                  GGT-ACATGGATCTTTCCTGGCTCCACCCAACCTATTGCCTCATAAATTGTTATTTAGCT 59170
                                                                                                                                                                                                                                                                                                                                                                                                  GGTGACCACAAGAATACACCAAATTACTCAATTGCAAGTAAACCTAATGCTGAGGTGTAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GACGGATTACCAAGACAAGTATTATAACAAGATAATGTCCATATATCACAAATATGCTGA 1125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TGAACGAACAATTCAAACTATCTGCAGGGACCTCAATCCTCTATATGATACTACAGTGCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      -----TCTTTAGGGACCTTAATCCTTTGCATCAGTTGACTGACCA 1065
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GTTGCAAGGAAAAGTATTGTTGGCTTTCTTCCTTGCCTAAAACCTAATGGATATGAGCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GGAGTTATCAGGTCT-GTATTGTCCAAACTGATGTTCAATATTTTACTGTATGTTCT---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ACGTTTTTACAACTCATGCACAAAGTATTGTTGTTATTGTAAGTGTCAGAGAATAGTTGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ACTITITCACATCTACCAACGTTAACATAGTTGTATGTAAGTTATCTTCTAGTTATGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AGGTTCTTGACTTTGCCGCTTTCTCTGAACCTGAATACGATCTTCCTATATTTTGCGCCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                    14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               */translation="MSSGGVGGGSLGAGLLYHKÉVSFALEETRLRTTLTPHPSQEKFK
SIKPNDDNTVENALSFSAFKIRLLRSLTIEKKNSYQVLDFAAFSEPEYDLPIFCANVF
TTHAQSIVVLDLNPLUTTVHKDYKDKYYRSIMPLVHKYNEVHLELMDQAIKBNNKAT
IARNQEEQHKYLTWRAEKDLVMEFLFEGVNTLGTKSFLDYFPEYARDDGSVNKKRSMI
GKSFETRFWDANGEFIGDAEAO."
GKSFETRFWDANGEFIGDAEAO."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /note="hypothetical protein
similar to Arabidopsis thaliana chromosome
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /protein_id="BAB86193.1"
/db_xref="GI:19386815"
/db_xref="GI:19386815"
/translation="MYKIRMPALFRRRSGSKSPPLPQADPASGGGSPAPTPEEEMERV
/translation="MYKIRMPALFRRESLGHAATDDELARMMAEADADGDGFISLDEFAALNA
FRKFDANGDGRISRSELGALFRSGSHAATDDELARWLHGLGEKATVQQCRRMIEGVDQ
TASGGDAAVEEDLRHAFRVFDADGNGTISAAELARVLHGLGEKATVQQCRRMIEGVDQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    unknown protein"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /gene="B1147A04.10"
/note="contains
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /gene="B1147A04.10"
complement(62266
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /protein_id="BAB86192.1"
/db_xref="GI:19386814"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NGDGLISFEEFKVMMAGGGSFAKIA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /note="contains ESTs AU057966(S21949),(R10946)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /codon_start=1
                                                                   from
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    4.2%;
                                                                   patent US
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0; Mismatches 219;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score 91.6; DB 8;
Pred. No. 6.1e-10;
                                                                    7218 bp
US 5670367
                                                                                  DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length 150053;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                    linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    25;
                                                                                  PAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ψ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     F3L24.1"
                                                                                    28-DEC-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                 1305
                                                                                                                                                                                                                                                                                                                                                                                                 1185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    969
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       909
                                                                                                                                                                                                                                    59050
                                                                                                                                                                                                                                                                                                    59110
                                                                                                                                                                                                                                                                                                                                   1245
                                                                                                                                                                                                                                                                                                                                                                                                                                   59229
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  59349
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1025
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    59409
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     59469
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ψ
                                                                                                                                                                                                                                              REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 REFERENCE
AUTHORS
TITLE
JOURNAL
FEATURES
                                                                                                                                                                                                                                                                                                                  SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                  ACCESSION
VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 10
AX346574
LOCUS
Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    В
                                                                                                 BASE COUNT
ORIGIN
                                                                                                                                                                                                   FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                  DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   BASE COUNT
ORIGIN
                                  Matches 181;
                                                Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ORGANISM
                                                                                                                                                                                                                                  JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1147
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1933
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1207
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1873
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1267
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1813
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1327
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1753
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1387
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1633
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1087
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1693
                                                                                                                                                                                                                             Olek,A., Piepenbrock,C. and Berlin,K. Diagnosis of diseases associated with Patent: WO 0200928-A 1645 03-JAN-2002
                                                                                                                                                                                                                                                                                                                synthetic construct. synthetic construct
                                                                                                                                                                                                                                                                                                                                                                AX346574 12142 bp E
Sequence 1645 from Patent W00200928.
AX346574
AX346574.1 GI:18494460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Recombinant fowlpox virus Patent: US 5670367-A 14 23-SEP-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1 (bases 1 to 7218)
Dorner, F., Scheiflinger, F. and Falkner, F. Gunter.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Unknown
                                                                                                                                                                                                                                                                                                artificial sequences.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Unclassified
                                                                                                                                                                                                                 Epigenomics AG (DE)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Similarity
8; Conserv
   GATTATATTTCTCATTGTTTCTTGCTGTGAATTTTGGGTAAATTGATTTGAGTTGTCATT 564
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAAAGATTAGTAGGTGAAGCAAAGGCAAAGGTATAAAAGATTTGATCCCATTAGTGTCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RRRRRRRRRRRRRRRR 1070
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAAGAGCAGCATGAGGAG 2010
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CAAGTCAGATTTCAGAGTCATCAACACAAGAGGACGTGAACTTAGGGAAGTAGGAATAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ATGAAACTCGTCCATGGGATTTAACAGGACAATTTATCGGCTAACAATGATATATGTGAA 1932
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CAGAGTACCAAACAGAAGATGGAACTGTAAGCGATAAACGAAGTATCATTGGGAAGTCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CATTATTAATTAGCTTGTGAAGATGTTGAAAATGATTTGAACAAAATCAGGAGCTGCTAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     3009
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1944 a
                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Conservative 223; Mismatches
                                                                                                                   മ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /organism-"unknown"
1491 c 1486 g
                                                                                                                                                                                    1. .12142
                                                                                                                   note="chemically treated genomic 174 c 3311 g 5648 t
                                                                                                                                                  /organism="synthetic construct"
/db_xref="taxon:32630"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Location/Qualifiers
                                                                                                                                                                                                ocation/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2.5%;
                                              2.3%;
                                0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 53.6;
Pred. No. 0.1
                              Score 49; DB of Pred. No. 1.6; O; Mismatches
                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1929
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  BB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    4
                                                                                                                                                                                                                                                                                                                                                                                                                  DNA
                                                               6;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   147;
                                  200;
                                                                                                                                                                                                                                                    the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  6;
                                                                 Length 12142;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    368
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length 7218;
                                                                                                                                                                                                                                                    immune
                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                  DNA (Homo
                                                                                                                                                                                                                                                                                                                                                                                                                  linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      others
                                                                                                                                                                                                                                                                                                                                                                                                                  PAT
                                2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0;
                                                                                                                                  sapiens)"
                                                                                                                                                                                                                                                                                                                                                                                                                    01-FEB-2002
                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
```

1088 1992 1208 1872 1752

1812

1692

밁 Š Ъ δ 망 Ş 뫄 ρ ф Q 밁 οy 밁 δÃ 밁 Q В S

```
REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DEFINITION
ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RESULT 11
AX083744
LOCUS
                  B 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              γ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        뫄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               γQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               δÃ
                                                                        멍
                                                                                                           ΩV
                                                                                                                                             В
                                                                                                                                                                      QΥ
                                                                                                                                                                                                          В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      멼
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                        Ş
                                                                                                                                                                                                                                                                                                                                         BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FEATURES
                                                                                                                                                                                                                                                                                       Query Match
Best Local
                                                                                                                                                                                                                                                                          Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                  source
                                                                                                                                                                                                                                                                                                                                                                                                      promoter
                                                                                                                                                                                                                                                                                      Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      10604
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            10426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   10246
                                                                                                                                               141
                                                                                                                                                                            475
                                                                                                                                                                                                                                             415
                                                 595
                                                                                201
                  261
                                                                                                                                                                                                             81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 22
AX083744
                                                                                                                                                                                                                                                                                                                                                                                                                                                              Regulation of embryonic transcription in plants patent: WO 0111061-A 22 15-FEB-2001; UNIVERSITY OF BRITISH COLUMBIA (CA) Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              artificial sequences.
1 (bases 1 to 1141)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              synthetic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            synthetic construct.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AX083744.1 GI:13185472
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Kunst, L.
                                                                                                                                                                                                                                                                                         Similarity
                                                                               DRDWSBKRMNYGMBWWKNWSYDVTYYWWVWDDMCKRKVRRWVRTRGRMRNYMVAWBTAHR
                                                                                                                                             YVTAMNNAWTTMCMMDKDDKRTRWWWKKNNNATGWDDDTKYHMWNNNGCBTVTWMVRYKT
                                                                                                                                                                            TGCAATTACATTTCGTTAGTGTAGTGGGAGGATTATATTTCTCATTGTTTTCTTGCTGTGA 534
                                                                                                                                                                                                            GWYKKKWYBCANNTSBRYHARRWKDMKTAYBMTMTNKWGKTGWRHRYWRWRAMBDTVDHH 140
                                                                                                                                                                                                                                             GTCTGCTTTAGAAGAAACCAGGAAAAGGATCGTTCTTGAACCTTCACATCTCCAGGTATA 474
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TTTGTTTTAGGAATTTTAAATGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GGCAATAGAGAATGAGACAATGCAGGTTTAACTTCAGCAGTACAAACTGATTGCTTTAGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAGGTGGAAATTTAATGTAAATAATTTTAAATGTTTAT--ATTAAATAGTTGGGTTTATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TAAGACCGAACTTCAAATGCTTGCTTTTTAAATCTTCAAAGATTAGACTCTTGAGGAGTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TGTTTTTCTAATCACGAAACTGTTTCAGGAAAAGTATAGTAGCATGACAGGACTAGATGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AGGAACCAAACAATAACTTTACTGTTATAGACTGCTTATATAAGTAAAAGTTCAGATTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GACTGCTTATATAAGTAAAAGTTCAGATTTTGTTTTTCTAATCACGAAACTGTTTCAGGA 654
                                                                                                              CGGGTTTCATGGAGCCTGAGTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CCCATTTCCTTACTTTCAATTGATTGATTGTATCTTCGCTTAGGTCTTTGACTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TGTTTTGTTTCGGGGTTTTTTTTTTGGTTTTTACGTGATATTTAGTTATTGTTTTTTT
                  RRYNNGWTBAMAYRRWTMNNNNNAKAMCKRAKYWGWNRABVNSTCTTWKSKTTKVRTSC
                                                                                                                                                                                                                                                                                                                                                         123
                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                and Clemens, S.
                                                                                                                                                                                                                                                                                                                                                      promoters"
a 32 c
                                                                                                                                                                                                                                                                                                                                                                                                       /db_xref="taxon:32630"
1. .1141
                                                                                                                                                                                                                                                                                                                                                                                     /note="consensus sequence of A.t.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              construct
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         from Patent
                                                                                                                                                                                                                                                                                       2.2%;
                                                                                                                                                                                                                                                                            369;
                                                                                                                                                                                                                                                                                       Score 48.4; DB 6;
Pred. No. 3.3;
                                                                                                                                                                                                                                                                                                                                                    42 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1141 bp
WO0111061.
                                                                                                                                                                                                                                                                            Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   887
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      10626
                                                                                                                                                                                                                                                                                                                                                        112 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DNA
                                                                                                                                                                                                                                                                         515;
                                                                                                                                                                                                                                                                                                                                                         832
                                                                                                                                                                                                                                                                                                      Length 1141;
                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        linear
                                                                                                                                                                                                                                                                                                                                                         others
                                                                                                                                                                                                                                                                                                                                                                                     L.a.,
                                                                                                                                                                                                                                                                                                                                                                                       and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PAT
                                                                                                                                                                                                                                                                          4;
                                                                                                                                                                                                                                                                                                                                                                                       .
n
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        28-FEB-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               804
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            10483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                864
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               10543
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      10365
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     624
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   10305
                                                                                                                                                                                                                                                                                       RESULT 12
AL159996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Вþ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                               Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                  COMMENT
                                                                                                                                                                                                                                                                                                                                                         문
                                                                                                                                                                                                                                                                                                                                                                                  δÃ
                                                                                                              REFERENCE
                                                                                                                                                                                                                                                           DEFINITION
                                                                                                                                                                            SOURCE
                                                                                                                                                                                             KEYWORDS
                                                                                                                                                                                                             VERSION
                                                                                                                                                                                                                              ACCESSION
                                                                                                                                                                                                                                                                            Locus
                                                                                AUTHORS
TITLE
                                                                JOURNAL
                                                                                                                                                            ORGANISM
                                                                                                                                                                                                                                                                                                                                                         1037
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1255
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1075
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1015
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        679
                                                                                                                                                                                                                                                                                                                                                                                                                     977
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 917
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           797
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 955
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 560
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              500
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         440
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        775
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       381
Submitted (19-JUL-2000) Sanger Centre, Hinxton, Cambridgeshire, CB10 1SA, UK. E-mail enquiries: humquery@sanger.ac.uk Cione requestes clonerequest@sanger.ac.uk
On Jun 21, 2000 this sequence version replaced gi:8346239.
During sequence assembly data is compared from overlapping clones
                                                                                                                                                                                                                                        AL159996 188357 bp DNA linear PRI Human DNA sequence from clone RP11-401F12 on chromosome STSs and GSSs, complete sequence.
                                                                                Direct Submission
                                                                                             Laird, G.
                                                                                                           Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.

1 (bases 1 to 188357)
                                                                                                                                                            Homo sapiens
                                                                                                                                                                                                HTG
                                                                                                                                                                                                             AL159996.7 GI:8648450
                                                                                                                                                                                                                              AL159996
                                                                                                                                                                              naman.
                                                                                                                                                                                                                                                                                                                                                                                       TTATTGGAAACTTTGACTGAGAATCTATCATCT 1407
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TDDRWRBAYINNNNNRMAYYGAYADDYAYYMSDTCDAWMKWDATKMNNATTYNRGTAWR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CTTGAGATTTATTTGCAGACTTTCCCATGGGGAGGGGAAATTGACTGGTGAATCCATAAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CCAAGACAAGTATTATAAÇAAGATAATGTCCATATATCACAAATATGCTGAGGTGACCAC 1134
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AAHYSRKKWTBYKRKTMVNNNGTTMWKRMWAWYWKMDMD-WBGTYNNNNNGGRTYYGWT
                                                                                                                                                                                                                                                                                                                                                        MKAWWKVMATGSWNTNSYARWAYKTRAYKGWYY 1069
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AAGAATACACCAAATTACTCAATTGCAAGTAAACCTAATGCTGAGGTGTAAATGACTGAT 1194
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          YAAAAVKAAKKHWRWANKWAMRGWHADAAABTTDKRNNGAYTKYTTTNNNNTYRGVVTNT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        YKBAANNAYYTHANNWWGCWNNATDTRRTMWKNNNNNAGTWKNNNNNAKNA--SAAKN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  KCHCMKAWYKAKKYAGAGGSNNNNNNNNNNNNNNNNNATCARDDYYAASRWYAMANAKWYY 678
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TCTTCTAGTTATGCTGGAGTTATCAGGTCTGTATTGTCCAAACTGATGTTCAATATTTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TNNSWRWRSDTRS-MGRANNYARABHYGYKWNTRWWBWSHTWBHBRAGAAHYWMBMMYBA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CCATATTCTGTGCTAACTTTTCACATCTACCAACGTTAACATAGTTGTAATGTAAGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               YTWYMWWRRYAHANNNNWDYWKACTWYKYBVCSKWWNNYAAWYTKSSWNYTSRYYRWK 559
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TTTGTATCTTCGCTTAGGTCTTTGACTTTGCGGGGTTTCATGGAGCCTGAGTATGATACTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          KNKKMWTYYKWKANNCKWRAWDHKTCTHNNTTWWKMKTYWNNCYWKSMTNGKSHRBAAAV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ATCTTCAAAGATTAGACTCTTGAGGAGTATGGCAATAGAGAATGAGACAATGCAGGTTTA 774
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WANNCRAGDANKDHKWWKWSAAMGYYWNNNNNNWTYKKARHBARWDWVWHSAWKKWHAN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NCTWYTWMTTTRTTWYAATRWKTNNATGSMTRCNATGWKNNNYWTGWKTRWTAYRMATRW
                                                                                                                                                                                                                                                                                                                                                                                                                                                 TIGITCICIGCGITTCTAGAGTACTATCAGGTATATACTCAGCGGCCAAAAGCTAAGGTI 1374
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TNNNNNMTMKTKYYBHAAWNNNNNGKMCTAHTWWVCKATKTTKGCWMNCTTTCRKYKN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TTTTTCTCGCCTTTGGTGATGTGGACTAGGTTTTCGTCTAGCAAAGAAAAACATAAGGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AARDGWANNNNNNNNNNNNNGWSDMWYTWWAYANYGT NNNNNNNNNAYAWWT NKWYYT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      24-JUL-2000
9. Contains
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1314
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1254
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 618
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     976
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                916
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             856
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  954
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             894
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            499
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      380
                                                                                                                                                                                                                                                                                                                                                                                                                        1036
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             796
```

```
FEATÚRES
                                                                                                      misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                              misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            misc_feature
                                                                                                                                                             repeat_region
                                                                                                                                                                                                                          repeat_region
                                                                                                                                                                                                                                                                                       repeat_region
                                                                                                                                                                                                                                                                                                                                                     repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                source
                                         repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            The following abbreviations are used to associate primary accession numbers given in the feature table with their source databases:
EME:, EMBL; Sw:, SWISSPROT; Tr:, TREMBL; Wp:, WORMPEP; Information on the WORMPEP database can be found at http://www.sanger.ac.uk/Projects/C_elegans/wormpep This sequence was generated from part of bacterial clone contigs of human chromosome 9, constructed by the Sanger Centre Chromosome 9 Mapping
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Where differences are found these are annotated as variations together with a note of the overlapping clone name. Note that the variation annotation may not be found in the sequence submission corresponding to the overlapping clone, as we submit sequences with
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   annotated human repeat sequence elements (e.g. Alu). Where the sequence is ambiguous, there is an annotation using the 'unsure'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           http://www.sanger.ac.uk/HGP/Chr9
RP11-401F12 is from the library RPCI-11.2 constructed at the
Roswell Park Cancer Institute by the group of Pieter de Jong.
further details see http://bacpac.med.buffalo.edu/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 only a small overlap as described above.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FCTOR: pBACe3.6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   feature key
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          s sequence has been finished according to sequence map criteria follows. An attempt is made to resolve all sequencing problems, has compressions and repeats, but not necessarily within known
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 sequence is the entire insert of clone RP11-401F12 The truend of clone RP11-208G24 is at 167549 in this sequence. The right end of clone RP11-395D3 is at 5200 in this sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Further information can be found at
                                                                                             /note="L2 repeat: matches 1986.
complement(12504. .12890)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        complement(5743
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      'note="U2 repeat: matches 1. .38 of consensus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 'note="IN10 excised: This sequence represents
http://doi.org/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1007/10.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /organism="Homo sapiens"
/db_xref="taxon:9606"
/chromosome="9"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Location,
                                                                                                                                                                                                                                                                                                                                                                                                                                               'note="match: GSS:
                                                                         note="match: STS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            note="match: GSS: Em:AQ606829"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         'clone="RP11-401F12"
                                                                                                                                                                                                                                                                                                                                                                                 note="match: GSS: Em:AQ830958"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     note="match: GSS: Em:AQ901451"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       .18835
                                                                                                                                                                                                                                                                                           te="Tigger3b repeat: matches
6. .8773
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                te="L1PB3 repeat: matches 5916. .6147 of consensus"
                                                                                                                                                                                             :e="MER5A repeat: matches 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               re="match: GSS: Em:AQ823967"
                                                                                                                                                                                                                                                                                                                                                        .8450
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                .4006
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   .4430
                                                                                                                                                                                                                                                                                                                                                                                                                     . 6658
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         _lib="RPCI-11.2"
                                                                                                                                                                                                                                                 L2 repeat: matches 2452. .2611 of consensus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      match: GSS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LIMC4 repeat: matches 6462. .7077
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                3 copies 3 mer aac 92% conserved
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 copies 4 mer gtgt 96% conserved"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        copies 32 mer 96% conserved"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /Qualifiers
      mer gitgt 90% conserved"
                                                                         Em: HSA311YC1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Em: AQ302480"
                                                                                                                                                                                                                                                                                                                                                                                                                                               Em: AQ132828
                                                                                                                                .2272 of consensus
                                                                                                                                                                                                                                                                                                                 8. .1231
                                                                                                                                                                                          .189 of consensus*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  of
                                                                                                                                                                                                                                                                                                                 of consensus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     consensus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 true
. The
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              For
                                                                                                                                                                                       misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         misc_feature
                                                                                                                          repeat_region
                                                                                                                                                                                                                                                 repeat_region
                                                                                                                                                                                                                                                                                                           repeat_region
                                                                                                                                                                                                                                                                                                                                                                        repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           repeat_region
repeat_region
                                                             repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                     repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /note="MIR repeat: matches 57. .192
complement(32857. .33263)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /note="AluJo repeat: matches 1.
complement(16254. .16783)
/note="match: GSS: Em:AQ764225"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /note="MLT1F repeat: matches 197.
complement(25531. .26230)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /note="AluSx repeat: matches 1.
complement(19534..19956)
                                                                                                                                                                                                                                                                                                                                           /note="10 copies 4 mer acac 92% conserved
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                21025. .21200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /note="6 copies 6 mer gtgtgt 91% conserved"
13805. .14099
                                                                                          note="MIR repeat: matches 81. .127 of consensus"
                                                                                                                                                       note="match:
                                                                                                                                                                                                                 note="MIR repeat: matches 2. .246 of consensus"
                                                                                                                                                                                                                                                                                                                                                                                                        'note="AluSq repeat: matches 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                note="THEIB repeat: matches 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              'note="L1MC2 repeat: matches 6247. .6326 of consensus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          note="AluSg repeat: matches 2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    note="MER20 repeat: matches 2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         note="L2 repeat: matches 2184.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     e="FLAM_A repeat: matches 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          e-"MLT1H repeat: matches 70.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        e="match: GSS: Em:AQ787911"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       e="match: GSS: Em:AQ042003"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  e="MIR repeat: matches 35.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      e="MADE1 repeat: matches 5.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             -"AluSq repeat: matches 16.
                                                                                                                                                                                                                                                 '3 copies 12
                                                                                                                                                                                          .36469
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             .20812
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            .16364
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          .16013
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           .12650
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     .12647
                                                                                                                                                                                                                                                                                                                 .35388
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          .15839
                                                                                                                                                                                                                                                                                                                                                                              35388
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   21646
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     17528
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2020
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               R repeat: matches 40.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          copies 2 mer ac 80% conserved*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                repeat: matches 2589.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   repeat: matches 2609.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       repeat: matches 2357.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 copies 2 mer tg 92% conserved'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             repeat: matches 2477.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          repeat: matches 3. .290 of consensus"
                                repeat: matches 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              repeat: matches 6667.
                                                                                                                                                          GSS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GSS: Em:AQ139531"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GSS: Em:AQ822292"
                                                                                                                                                       Em: AQ031409
                                                                                                                                                                                                                                                                                 mer 94% conserved"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               .246 of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  .123 of consensus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    .214 of consensus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         .2355 of consensus
                                   .553 of consensus
                                                                                                                                                                                                                                                                                                                                                                                                        .301 of consensus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      .80 of consensus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    .2705 of consensus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           .296 of consensus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             .2745 of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                .2612 of consensus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          .295 of consensus*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            .288 of consensus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         .2674 of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                .532 of consensus*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             .302 of consensus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         364 of consensus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        .122 of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     .541 of consensus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              .7734 of consensus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  of consensus"
```

consensus"

consensus"

consensus\*

consensus"

Unpublished

```
SOURCE
ORGANISM
                                                                                                                                                                                                                   AC011168
LOCUS
                                     REFERENCE
                                                                                                                           KEYWORDS
                                                                                                                                                                                                  DEFINITION
                                                                                                                                                                                                                                                     RESULT 13
                                                                                                                                                  /ERSION
                                                                                                                                                                ACCESSION
 AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Local L
                                                                                                                                                                                                                                                                                                                                                                                                                                                      137851
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             137791
                               Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.

1 (bases 1 to 204782)
                                                                                                                                                                AC01:
                                                                                                                                                                              unordered pieces.
                                                                                                                                                                                                  Homo
                                                                                                            OIIIOH
                                                                                                                                              AC011168.4 GI:7654526
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2.2%;
Similarity 51.4%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AGTTTGATGTGCTCCTGACTAACCATATGAAGCTTA 138006
                                                                                                                                                                                                                                                                                                                                       AACTTCAAATGCTTGCTTTTAAATCTTCAAAGATTA
                                                                                                                                                                                                                                                                                                                                                                           TACTTTCTTGTCTTTTCATTGCTGTTATGTTATGAGGGAAGGACTCCTTCCCAATCCTG
                                                                                                                                                                                                                                                                                                                                                                                                            TAATCACGAAACTGTTTCAGGAAAAGTATAGTAGCATGACAGGACTAGATGGTAAGACCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                ACCAAATAACTCTGGACTTCTAGACTGCTCTACTCTTCAAATCCTTGGATTTGCTTTTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AACAAATAACTTTACTGTTATAGACTGCTTATATAAGTAAAAGTTCAGATTTTGTTTTTC 632
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TTCTCATTGTTTCTTGCTGTGAATTTTGGGTAAATTGATTTGAGTTGTCATTAGGAACCA 572
                                                                                                                                                                                           1168 204782 bp sapiens clone RP11-10E23, ***
                                                                                                                             HTGS_PHASE1.
sapiens,
                                                                                         sapiens
                                                                                                          sapiens.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /note="MER33 repeat: matches 203.
44779. .44985
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /note="MIR repeat: matches 122.
38334. .38392
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /note="MIR repeat: matches 128. .229 of consensus"
14631. .44747
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       'note="AluSg repeat: matches 1. .291 of consensus"
Linton,L., Nusbaum,C. ns, clone RP11-10E23
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             'note="match: STS: Em:G13414"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    e="MER4D repeat:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                e="MER4D repeat: matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    e="LTR33 repeat: matches 29. .165 of consensus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ="L2 repeat: matches 2628. .2748 of consensus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ="FRAM repeat: matches 0.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           .43613
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        JIK33 repeat: matches 302.
39212
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LPA4 repeat: matches 5841. .6144 of consensus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           repeat: matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             repeat: matches 2356. .2428 of consensus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              repeat: matches 2692.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score 48; DB 9; Length 188357; Pred. No. 1.7;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             repeat:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        repeat: matches 472.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               repeat:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Mismatches 105; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             matches 39. .134 of consensus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    matches 1.
              and Lander, E
                                                                                                                                                                                              DNA linear HTG 2:
SEQUENCING IN PROGRESS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2252.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           370:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                359.
                                                                                                                                                                                                                                                                                                                                         728
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  .164 of consensus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    .234 of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              .2750 of consensus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  .249 of consensus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          .2356 of consensus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      .324 of consensus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      .521 of consensus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             .472 of consensus'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                .1017 of consensus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         .518 of consensus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    consensus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0,
                                                                                                                                                                                              27-APR-2000
SS ***, 96
                                                                                                                                                                                                                                                                                                                                                                                                              692
                                                                                                                                                                                                                                                                                                                                                                             137970
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           JOURNAL
REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          JOURNAL
```

В QΥ 망 Qy 밁 Qy

멍 δÃ

```
Ferreira, P., FitzHugh, W., Forrest, C., Funke, R., Gage, D., Galagan, J., Gardyna, S., Grant, G., Hagos, B., Heaford, A., Howland, J. C., Johnson, R., Jones, C., Kann, L., Karatas, A., Lehoczky, J., Lieu, C., Locke, K., Macdonald, P., Marquis, N., Lehoczky, J., Lieu, C., Locke, K., Macdonald, P., Marquis, N.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Submitted (01-OCT-1999) Whitehead Institute/MIT Center for Genome Research, 320 Charles Street, Cambridge, MA 02141, USA On Apr 27, 2000 this sequence version replaced gi:7143442.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   McEwan,P., McGurk,A., McKernan,K., McLaughlin,J., Meldrim,J., Morrow,J., Naylor,J., Norman,C.H., O'Connor,T., O'Donnell,P.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Baldwin,J., Barna,N., Beckerly,R., Boguslavkiy,L., Boukhgalter,B., Brown,A., Castle,A., Colangelo,M., Collins,S., Collymore,A., Cookk,P., Dearellano,K., Dewar,K., Domino,M., Donelan,L., Doyle,M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Birren, B., Linton, L.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              http://ftp.genome.washington.edu/RM/RepeatMasker.html
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Stange-Thomann, N.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Peterson,K.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      resfaye,S.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NOTE: This is a 'working draft' sequence. It currently consists of 96 contigs. The true order of the pieces is not known and their order in this sequence record
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       arbitrary. Gaps I runs of N, but to This record will
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     as soon as it is available be preserved.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (bases 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              repeats were identified using RepeatMasker:
t, A.F.A. & Green, P. (1996-1997)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Center project name: L3056
Center clone name: 10_E_23
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Contact: sequence_submissions@genome.wi.mit.edu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Web site: http://www-seq.wi.mit.edu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Center code: WIBR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Center: Whitehead Institute/ MIT Center for Genome Research
                                                                                                                                                                 13399 13498: gap of 100 bp
13499 14923: contig of 1425 bp
14924 15023: gap of 100 bp
15024 16028: contig of 1005 bp
                                                                    18924 19023: gap of 19024 20351: con
                                                                                                                       17573 17672:
                                                                                                                                                        16029 16128:
                                                                                                                                                                                                                                                            11567 11666:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1039 1138: gap
1139 2386:
                                                                                                                                                                                                                                                                                                          8422 8521: gap of
8522 9673: cor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2387 2486: gap
                                                                                                                                                                                                                                                                                                                                                                           9 6138: gap (
9 7272:
21827: gap
23601:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ye, W.J., Zimmer, A.
                              20351: contig of 1328 bp
20451: gap of 100 bp
21727: contig of 1276 bp
                                                                                                                                                                                                                                                                       8521: gap of 100 bp
9673: contig of 1152 bp
9773: gap of 100 bp
11566: contig of 1793 bp
                                                                                                                                                                                                                                                                                                                                                              7372:
                                                                                                                                                                                                                                                                                                                                                                                                                                 4886: gap
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   3759:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ann, N., Stojanovic, N., Subramanian, A., Talamas, J., Tirrell, A., Vassiliev, H., Vo, A., Wheeler, J., Wu, X.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   but the exact sizes of the gaps are unknown d will be updated with the finished sequence it is available and the accession number wil
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           to 204782)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 -- Genome Center
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Pollara, V., Riley, R., Roy, A.,
                                                                                                  18923: ccr
                                                                                                                                    17572: cont
                                                                                                                                                                                                                                        13398: cont
                                                                                                                                                                                                                                                                                                                                            2: gap
8421:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   3659:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1038:
                                                                                                                                                                                                                                                                                                                                                                                                                  6038:
                                                                                                                                                                                                                                                                                                                                                                                                                                                  4786:
                 gap of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       between the contigs are
                                                                                                                                                                                                                                                                                                                                                                                             contig of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 contig of
                                                                                                                                                                                                                                                                                                                           100 1
contig of 104
of
                                                                                              P of 100 bp contig of 1251 b
                                                                                                                                                                                                                                 p of 100 by contig of 1732
                                                                                                                                                                                                                                                                                                                                                                                                                                 contig.of
of 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   contig of 10
                                                                                                                                    contig of 1444 bp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       of
                                                                                                                                                                                                                                                                                                                                                                           of 100 bp
contig of 1134
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   contig of 1038 bp in length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Nusbaum, C., Lander, E.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    and Zody, M.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       100
                                                                                                                                                                                                                                                                                                                                                                                                                                 100 bp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   100 bp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   100 bp
                                                                                                                                                        100 bp
                                                                                    100 bp
                                                                                                                                                                                                                                                                                                                                            1049
                                                                                                                                                                                                                                                          ģ
                                                                                                    dq
                                                                                                                                                                                                      bp in
                                                                                                                                                                                                                                        đđ
                                                                                                                                                                                                                                                                                                                                           đđ
                                                                                                                                                                                                                                                                                                                                                                             đđ
                                                                                                                                                                                                                                                                                                                                                                                                               ďď
                                                                                                                                                                                                                                                                                                                                                                                                                                               đđ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 đđ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   đđ
                                   in
                                                                                                                                                                                                                                                                                                          in
                                                                                                                                                                                                                                                                                                                                                                                                                                                  'n
                                                                    in
                                                                                                      in
                                                                                                                                        in
                                                                                                                                                                        'n
                                                                                                                                                                                                                                          in
                                                                                                                                                                                                                                                                          in
                                                                                                                                                                                                                                                                                                                                            in
                                                                                                                                                                                                                                                                                                                                                                              in
                                                                                                                                                                                                                                                                                                                                                                                                                in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     in
                                  length
                                                                                                                                                                                                                                                                          length
                                                                                                                                                                                                                                                                                                                                                                             length
                                                                                                      length
                                                                                                                                                                                                                                        length
                                                                                                                                                                                                                                                                                                          length
                                                                                                                                                                                                                                                                                                                                                                                                                                                 length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         represented as
                                                                    length
                                                                                                                                      length
                                                                                                                                                                                                                                                                                                                                           length
                                                                                                                                                                                                                                                                                                                                                                                                               length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Santos,R., Severy,P., ian,A., Talamas,J.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         It currently
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Allen, N.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Anderson,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Horton, L.,
```

55 30054: gap of 100 bp 55 31877: contig of 1829 18 31977: gap of 100 bp 18 33534: contig of 1557 18 33534: days of 100 bp

28491: gap or 29954: contig of 1463

30054:

27231: gr 28391

gap of gap of gap of

25579: gap of

25479

of 1

gap of contig

27131

23701: 24162:

24062: cont

of

f 361 br 100 bp

3 35042: ga, 36468:

34942:

```
404 4503; gap of 1584 bp in length 0884; contig of 1584 bp in length 088 47187; gap of 100 bp 100 bp 1129 bp in length 1129 bp in length 1129 bp in length 1129 bp in length 1129 bp in length 1129 bp in length 1129 bp in length 1129 bp in length 1125 50451; gap of 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 bp 100 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           765 41020: contig of 1256 bp in 16
721 41120: gap of 100 bp
121 42308: contig of 1188 bp in 1e
109 42408: gap of 100 bp
09 43754: contig of 1346 bp in 1er
15 43854: gap of 100 bp
16 45503: gap of 100 bp
17 45503: gap of 100 bp
18 45503: gap of 100 bp
19 45503: gap of 100 bp
10 45503: gap of 100 bp
11 45503: gap of 100 bp
33 65227: contig of 1675 bp
28 65327: gap of 100 bp
86 66601: contig of 1274 bp
12 66701: gap of 100 bp
12 68624: contig of 1923 bp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     38446: gap of 100 bp

38446: contig of 1778 bp in

38446: gap of 100 bp

39664: contig of 1218 bp in

39764: gap of 100 hm
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         36468: contig of 1426 bp in 36366: gap of 100 bp 38346: contig - -
                                                                                                                                                                                                                                                                                                        100 bp
1452: contig of 1432 bp
gap of 100
100
100
100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       42: contig of 1308 bp in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  100 bp
of 1160 bp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         100 bp
1823 bp in
                                                                                                                                                                                         100 bp
1070 bp in
    100 bp
f 2561 bp in length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               100 bp
f 361 bp in length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1552 bp in
                                                                                                                                                                                                                         ) bp
923 bp in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     bp in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        þ
                                                                                                                                                                                                                                                                   ďď
                                                                                                                                                                                                                                                                                               bp in
                                                                                                                                                                                                                                                                                                                              bp in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             bp in
                                                                                                                                                                                                                                                                   in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  'n
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length
                                                                                                                                                                                                                                  length
                                                                                                                                                                                                                                                                                                 length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  length
                                                 length
                                                                                                                                          length
                                                                                                                                                                                                                                                                   length
                                                                                                                                                                                                                                                                                                                                length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  length
                                                                              length
                                                                                                                                                                        length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     length
                                                                                                             length
   RESULT 14
AX344555
                                                                                           Š
                                                                                                                             밁
                                                                                                                                                       Qy
                                                                                                                                                                                       B
                                                                                                                                                                                                                  QΥ
                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                            QΥ
                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                         οy
                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                      Š
                                                                                                                                                                                                                                                                                                                                                                                                                                       Best Local Sin
Matches 109;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
                                                                 25593
                                                                                                                           25533
                                                                                                                                                                                         25473
                                                                                                                                                                                                                                                    25413
                                                                                                                                                                                                                                                                                                                 25353
                                                                                                                                                                                                                                                                                                                                                                             25293
                                                                                                                                                                                                                                                                                                                                             573
                                                                                              813
                                                                                                                                                                                                                     693
                                                                                                                                                                                                                                                                                 633
                                                                                                                                                                                                                                                                                                                                                                                                          513
                                                                                                                                                          753
                                                                                                                                                                                                                                                                                                                                                                                                                                       Similarity 35.09; Conservative
                                                                CCTTCCTTCTA 25603
                                                                                                                                                                                                                                                                                                                                AACAAATAACTTTTACTGTTATAGACTGCTTATATAAGTAAAAGTTCAGATTTTGTTTTTC
                                                                                                                             TACTTTCTTGTCTTTTCATTGCTGTTATGTTATGAGGGAAGGACTCCTTCCCAATCCTG
                                                                                                                                                                                                                                                                              TAATCACGAAACTGTTTCAGGAAAAGTATAGTAGCATGACAGGACTAGATGGTAAGACCG
                                                                                                                                                                                                                                                                                                                                                                                                        TTCTCATTGTTTCTTGCTGTGAATTTTGGGTAAATTGATTTGAGTTGTCATTAGGAACCA 572
                                                                                              CTTACTTTCAA
                                                                                                                                                        AGAATGAGACAATGCAGGTTTAACTTCAGCAGTACAAACTGATTGCTTTAGTCCCATTTC
                                                                                                                                                                                       AACTTCAAATGCTTGCTTTTAAATCTTCAAAGATTAGACTCTTGAGGAGTATGGCAATAG
                                                                                                                                                                                                                                                                                                              ACCAAATAACTCTGGACTTCTAGACTGCTCTACTCTTCAAATCCTTGGATTTGCTTTTTA
                                                                                                                                                                                                                                                                                                                                                                           108114 11043: gap of 110444 110543: gap of 110544 113388: contig 110544 113488: gap of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            100410
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           119160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                108014 108113: gap of 108114 110443: cont
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                4 113388: contig c
9 113488: gap of
9 115702: contig c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       55 96205; contig of 2241

100 bp

100 bp

100 bp

100 96849; gap of 100 bp

100 96849; gap of 1951

110409; contig of 1951

110409; contig of 1509
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               8 126327: gap of
8 129037: cont
8 129137: gap of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      115802: gap
119059: cc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          91991: gap or
91864: contig
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            105639: gap of 108013: contig
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            121602: gap of 
123908: cont
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        119159: gap of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             102768: gap of 105539: cont
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       100509: gap of 100 bp
102668: contig of 2159 bp in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  93964: gap of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            85314:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        -1: gap of
91891:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              4008: gap of
126227: cont
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  9ap
87669:
                                                                                                                                                                                                                                                                                                                                                                                                                                                    2.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           .21502
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               89611
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             gap of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 contig of 2241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             contig of 2330
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       contig of 2771
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             contig of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        contig of 2355
                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 47.8; DF Pred. No. 1.9; 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               contig
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            contig
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       contig of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   contig of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      contig
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       contig of 1509
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        of.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        100 bp
g of 1951 k
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    of.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 of.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              of.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  of.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  100 bp
of 1873 bp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          of 2494 bp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        100 bp
f 444 bp in length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         100 bp
3257 bp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2845
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2343
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2219
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             100 bp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        3257 bp in
100 bp
2343 bp in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                .00 bp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             100 bp
2374 bp in length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   00 bp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     . dq ...
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            dd r
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DВ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      dq.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              bp in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                bp in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   bp in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ďď
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ďq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  bp in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            bp in length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            bp in length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ď
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         bp in length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               bp in length
                                                                                                                                                                                                                                                                                                                                                                                                                                       202;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  <u>ب</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ĺn
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ĺn
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ĺn
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               'n
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  in length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         in length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length 204782;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     length
                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                       0;
                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                              25412
                                                                                                                                                                                                                                                                                                                                             632
                                                                                                                                                          812
                                                                                                                                                                                                                    752
                                                                                                                                                                                                                                                                                 692
                                                                                                                                                                                       25532
                                                                                                                                                                                                                                                    25472
                                                                                                                                                                                                                                                                                                                                                                           25352
                                                                                                                                                                                                                                                                                                                                                                                                                                       0
```

0352 50451:

63552:

63452:

PAT 01-FEB-2002

```
REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LOCUS
DEFINITION
ACCESSION
                                                                     DEFINITION
ACCESSION
VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                    Вр
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SOURCE
                                KEYWORDS
SOURCE
                                                                                                                                          RESULT 15
AX348444
                                                                                                                                                                                                                                                                                                                      δÃ
                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                               Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           QY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FEATURES
                                                                                                                                                                                                                                                 20
                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              BASE COUNT
                                                                                                                                                                                                                    밁
                                                                                                                          LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches
                   ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Local
                                                                                                                                                                                                                                                                                                                                                                                                                                         144964
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                144904
                                                                                                                                                                                                                    145144
                                                                                                                                                                                                                                                                                                                                                                                                     903
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            843
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 783
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AX344555 349980 bp
Sequence 6 from Patent WO0200932.
AX344555
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Olek, A., Piepenbrock, C. and Berlin, K. Diagnosis of known genetic parameters within Patent: WO 0200932-A 6 03-JAN-2002;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         synthetic construct.
synthetic construct
artificial sequences.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AX344555.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Epigenomics AG (DE)
                                                                     Sequence 139 from Patent AX348444 GI:18614480
                 synthetic construct. synthetic construct
artificial sequences
                                                                                                                          AX348444
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TCTTCTTTAGGGACCTTAATCCTTTGCATCAGTTGACTG
                                                                                                                                                                                                                                                                                                                            TTATGCTGGAGTTATCAGGTCTGTATTGTCCAAACTGATGTTCAATATTTTACTGTATGT
                                                                                                                                                                                                                                                                                                                                                                  TTTTTTTAGTTTTATTATTTAGTTATTTTTGAGTTGTGGTATTGTAGAGAATCGTTTTT
                                                                                                                                                                                                                                                                                                                                                                                                     TGTGCTAACTTTTTCACATCTACCAACGTTAACATAGTTGTATTGTAAGTTATCTTCTAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TTCGCTTAGGTCTTTGACTTTGCGGGTTTCATGGAGCCTGAGTATGATACTCCCATATTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                95599
                                                                                                                                                                                                                      TTTTTTTTATTTAATTATTATTTTGTTTTTGTTATTG 145182
                                                                                                                                                                                                                                                                                           2.2%;
llarity 48.0%;
Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /note="chemically treated genomic DNA (Homo /note="chemically treated genomic DNA (Homo sapiens)-original length of seq 1: 3.673778 <223>-split as follows.-seq 01 0.000.001 To 0.349.980-seq 02 0.300.001 fellows.-seq 01 0.000.001 To 0.349.980-seq 02 0.300.001 649.980-seq 03 600.001 949.980-seq 04 900.001 1.249.980-seq 05 1.200.001 1.549.980-seq 06 2.100.001 2.449.980-seq 07 1.800.001 2.149.980-seq 08 2.100.001 2.449.980-seq 10 2.700.001 2.449.980-seq 11 3.000.001 3.49.980-seq 12 3.300.001 3.649.980-seq 13 3.600.001 3.673.778 <223>-cplit as follows.-seq 12 3.300.001 3.649.980-seq 13 3.600.001 3.673.778 <223>-cplit as follows.-seq 14 0.000.001 70 0.349.980-seq 15 0.300.001 649.980-seq 16 600.001 949.980-seq 17 900.001 1.249.980-seq 18 1.200.001 1.549.980-seq 19 1.500.001 1.449.980-seq 20 1.800.001 2.149.980-seq 21 2.100.001 2.449.980-seq 20 1.800.001 2.149.980-seq 21 2.100.001 2.449.980-seq 20 2.400.001 3.673.778 "

3.673.778" as follows.-seq 25 3.300.001 3.649.980-seq 26 3.600.001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /db_xref="taxon:32630"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          organism="synthetic construct"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GI:18492441
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 .349980
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              78257 g 171739 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Score 47; DB 6; Length 349980; Pred. No. 2.5; Mismatches 145; Indels 0
                                                                                                           7441 bp
WO0202806
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DNA
                                                                                                                              DNA
                                                                                                                                                                                                                                                           1061
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          linear
                                                                                                                                linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           mhc
                                                                                                                                PAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       0;
                                                                                                                                  06-FEB-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     842
                                                                                                                                                                                                                                                                                                                                  1022
                                                                                                                                                                                                                                                                                                                                                                                                           962
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                902
                                                                                                                                                                                                                                                                                                 145143
                                                                                                                                                                                                                                                                                                                                                                      145083
                                                                                                                                                                                                                                                                                                                                                                                                                                           145023
```

```
Qy
                                                                                                                                                                                                                                                                      Qγ
                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                     δÃ
                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                    Qy
                                                                                                                                                                                                                                                                                                                                                                                              В
                                                                                                                                                                                                                                                                                                                                                                                                                   Q
                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FEATURES
                                                                                                                                                                                               뫄
                                                                                                                                                                                                                                                В
                                                                         Š
                                                                                                                       Qy
                                                                                                                                                 ₽
                                                                                                                                                                       δÃ
   맑
                       δÃ
                                                   ₽
                                                                                                 뫄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AUTHORS
TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Local Similarity
5406
                                                                                                                                                                                                                                                  5106
                                                                                                                                                                                                                                                                                                 5046
                                                                                                                                                                                                                                                                                                                                                4986
                                                                                                                                                                                                                                                                                                                                                                                               4926
                                                                                                                                                                                                                                                                                                                                                                                                                                              5226
                                                                                                                                                                                                  5166
                                                                                                    5286
                                                                                                                           511
                                                                                                                                                                           451
                                                                                                                                                                                                                           391
                                                                                                                                                                                                                                                                         331
                                                                                                                                                                                                                                                                                                                         271
                                                                                                                                                                                                                                                                                                                                                                       211
                                                                                                                                                                                                                                                                                                                                                                                                                       151
                            631
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     91
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             243;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Olek,A., Piepenbrock,C. and Berlin,K.
Method and nucleic acids for pharmacogenomic methylation analysis
Patent: WO 0202806-A 139 10-JAN-2002;
Epigenomics AG (DE)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TGTCGTTGCCAATTGCGTTTGTCTCACTGAAACTGTGAAAATTTTTATCTCTTTTATAGAT 150
                                                                                                                                                  TGAACCTTCACATCTCCAGGTATATGCAATTACATTTCGTTAGTGTAGTGGGAGGATTAT 510
                                                                                                                                                                                                 GGTGATTGTGTTGATATTTTCGGTTTTTATTTTTGTTAATGTTAGTAAATTATTTGTTAT 5225
                                                                                                                                                                                                                                              ATATAGTTATTGGATAAATATGAAGATAATTTTGGAAGAGTTTGTTTAGAGGGGTTATGA 5165
                                                                                                                                                                                                                                                                        AAAGAATCTTGCTTTTTTCAGTTTTCAGTATGAAGAAAAATTGAAGAGAGTGTCCGAGGA
                                                   CAAACAAATAACTTTACTGTTATAGACTGCTTATATAAGTAAAAGTTCAGATTTTGTTTT
                                                                                                                         ATTTCTCATTGTTTCTTGCTGTGAATTTTGGGTAAATTGATTTGAGTTGTCATTAGGAAC
                                                                                                                                                                                                                                                                                                ATAGTTTAGTTGTTATTTTAGTTTTTGGAAGTTGTGGAAAGGTGTTAGTGTGTTTATAGA 5105
                                                                                                                                                                                                                                                                                                                         GTTTTCAATTGGGTCATGCTTCAAGGCACCAAACCCACCTGTTCTAATCTCTGCAAGCCC
                                                                                                                                                                                                                                                                                                                                                                      AGGAGACCTTTGGTTTCAGTTTGTGAGTCTTGTTAATGGCTTTATCAATGGAGTTTGG
                                                                                                                                                                                                                                                                                                                                                                                               TGTGTCGTATAAGGAATTCGCAGAGTCTGCTTTAGAAGAAACCAGGAAAAGGATCGTTCT 450
     TTTGAATAAGAAATTTATGATGAAATTATA
                           TCTAATCACGAAACTGTTTCAGGAAAAGTA 660
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2098
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ည
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /organism="synthetic construct"
/db_xref="taxon:32630"
/note="chemically treated genomic 66 c 1948 g 3329 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           .7441
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ; Score 46.8; DB; Pred. No. 5.4; 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 327;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       6;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DNA (Homo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        sapiens)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                            270
                                                                                                                                                                                                                                                                                                                                                                                                     4985
                                                                                                                                                                                                                                                                                                                                                                                                                            210
                                                                                 630
```

Search completed: June Job time: 3733 secs 24, 2003, 13:42:45

```
Title:
Perfect score:
Sequence:
                                                                                                                                                                                    Result
No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Minimum DB seq length: 0
Maximum DB seq length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Word size :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          OM protein -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Post-processing: Listing first 45 summaries
                                                                                                                                                                                                                                                               Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                    Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    June 24, 2003, 18:49:36 ; Search time 31 Seconds (without alignments) 1414.176 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       OLIGO Gapop 60.0 , Gapext 60.0
                                                                                                                                                                                Query
Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          908470 seqs, 133250620 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-09-870-406A-33
329
     76.9
76.9
76.0
37.4
2.4
2.4
2.4
2.4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A_Geneseq_101002:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MALSMEFGFSIGSCFKAPNP.....
                                                                                                                                                                                                                                                                                                                          /SIDS2/gcgdata/geneseq/geneseqp-embl/AA1989, DAT: *
/SIDS2/gcgdata/geneseq/geneseqp-embl/AA1990, DAT: *
/SIDS2/gcgdata/geneseq/geneseqp-embl/AA1990, DAT: *
/SIDS2/gcgdata/geneseq/geneseqp-embl/AA1991, DAT: *
/SIDS2/gcgdata/geneseq/geneseqp-embl/AA1992, DAT: *
/SIDS2/gcgdata/geneseq/geneseqp-embl/AA1993, DAT: *
/SIDS2/gcgdata/geneseq/geneseqp-embl/AA1994, DAT: *
/SIDS2/gcgdata/geneseq/geneseqp-embl/AA1996, DAT: *
/SIDS2/gcgdata/geneseq/geneseqp-embl/AA1997, DAT: *
/SIDS2/gcgdata/geneseq/geneseqp-embl/AA1997, DAT: *
/SIDS2/gcgdata/geneseq/geneseqp-embl/AA1999, DAT: *
/SIDS2/gcgdata/geneseq/geneseqp-embl/AA1999, DAT: *
/SIDS2/gcgdata/geneseq/geneseqp-embl/AA1999, DAT: *
/SIDS2/gcgdata/geneseq/geneseqp-embl/AA2000, DAT: *
/SIDS2/gcgdata/geneseq/geneseqp-embl/AA2000, DAT: *
/SIDS2/gcgdata/geneseq/geneseqp-embl/AA2000, DAT: *
/SIDS2/gcgdata/geneseq/geneseqp-embl/AA2000, DAT: *
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GenCore version 5.1.6 Copyright (c) 1993 - 2003 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /SIDS2/gcgdata/geneseq/geneseqp-emb1/AA1981.DAT:*/SIDS2/gcgdata/geneseq/geneseqp-emb1/AA1982.DAT:*/SIDS2/gcgdata/geneseq/geneseqp-emb1/AA1983.DAT:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /SIDS2/gcgdata/geneseq/geneseqp-emb1/AA1984.DAT:*
/SIDS2/gcgdata/geneseq/geneseqp-emb1/AA1985.DAT:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SIDS2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SIDS2/gcgdata/geneseq/geneseqp-embl/AA1986.DAT:*
SIDS2/gcgdata/geneseq/geneseqp-embl/AA1987.DAT:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /SIDS2/gcgdata/geneseq/geneseqp-emb1/AA1980
                                                                                                                                                                                    Length DB
                                   163
263
554
628
                                                                                                  323
327
250
329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /gcgdata/geneseq/geneseqp-embl/AA1988.DAT:*
     ij
                                  AAG18224
AAG18223
AAG18225
AAM50863
AAW39567
ABB09063
ABB91133
ABG15871
   AAW69560
AAB98263
                                                                                                                                                                                                                                   SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            .SIIGKSYETRPWDLTGQFIG 329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             908470
Thermus caldophilu Herbicidally activ Novel human diagno Saccharomyces cere Anti-A33 antigen i
                                                                                                                                                                               Description
                                                                                                                Arabidopsis thalia
Arabidopsis thalia
Arabidopsis thalia
                                                                                 Arabidopsis phytoc
Propionibacterium
                                                                                                                                                                                                                                                                                                                                                                               RESULT 1
AAG18224
ID AAG1
XX
AC AAG1
XX
AC AAG1
DT 17.50
XX
AC ACC
XX
ACC
XX
ACC
XX
ACC
XX
ACC
XX
```

	AAG48026	21	315	2.1	7	
Arabidopsis	AAG31119	21	315	2.1	7	
	AAG50418	21	312	2.1	7	
Human G-prot	AAE11918	22	310	•	7	
Arabidopsis	AAG48027	21	309		7	
Arabidopsis t	AAG59725	21	303		7	
	AAG48028	21	295		7	
Arabidopsis tha	AAG37042	21	294	٠	7	
Listeria mon	ABB47532	23	287	2.1	7	
Novel human	ABG25822	22	285	•	7	
	AAG31120	21	278	•	7	
Arabidopsis	AAG37043	21	276	٠	7	
Arabidopsis thali	AAG37044	21	269		7	
Escherichia	ABB52873	22	266		7	
	AAG31121	21	261		7	
Arabidopsis thalia	AAG23431	21	194	٠	7	
Human ORFX p	ABP06009	23	186	٠	7	
<ul> <li>Novel human diagno</li> </ul>	ABG09948	22	167	٠	7	
Human	AAY12361	20	145	•	7	
Human poly	AAO02427	22	142	2.1	7	
Human	AAM24253	22	137		7	
Human	AAM90048	22	125	•	7	
Human polypeptide	AA006786	22	124	2.1	7	
Rabbit anti	AAB75151	22	109	2.1	7	
Rabbit anti-A33 an	AAB98232	22	109	2.1	7	
Streptococcus p	ABP25780	23	100	2.1	7	
Human cDNA	ABB10160	22	100	•	7	
Human ORFX prot	ABP01918	23	79	•	7	
secreted	AAB64549	22	78	2.1	7	
₼	AAB34729	21	78	•	7	
bone m	8	22	46	2.1	7	
n brain ex	AAM55647	22	46	•	7	
ide #2345	3483	22	46	2.1	7	
man Grip-1 I15	583	21	34	2.1	7	
A33 antigen bindin	AAB75183	22	11	2.1	7	

## ALIGNMENTS

Arabidopsis thaliana protein fragment SEQ ID NO: 19546

AAG18224;

17-0CT 2000 (first entry)

AAG18224 standard; Protein; 323 AA

X X X X Y Y X Y Y X Y Y X Y X X X X Y Y X Y Y X Y Y X Y Y X Y Y X Y Y X Y Y X Y Y X Y Y X Y	KW
Termination sequence.  Arabidopsis thaliana.  EP1033405-A2.  06-SEP-2000.  25-FEB-2000; 2000EP-0301439.  25-FEB-1999; 99US-0121825. 05-MAR-1999; 99US-0125488. 23-MAR-1999; 99US-0125788. 25-MAR-1999; 99US-0125788. 26-MAR-1999; 99US-012664. 29-MAR-1999; 99US-0126785. 01-APR-1999; 99US-0127462. 06-APR-1999; 99US-0128714. 16-APR-1999; 99US-0128714. 16-APR-1999; 99US-0128914. 16-APR-1999; 99US-0128915.	Protein identification; signal transduction pathway; metabolic pathway;

PR PR PR																																															
	PR	PR	PR	PR	PR	PR	PR	PR R	אָל אָל	PR	אַק	PR	אַק אַק	PR	אַק	PR	אַק	PR	R PR	PR	PR	PR	PR	PR	PR	PR	PR	בי ק	PR	PR	PR	PR :	ק ק	PR	PR	בל ע	PR	אַק	PR	PR	PR	PR	PR	PR	2 2	PR	PR
19- 19-	19-	16-	15-	13-		- 80				8	<u>ب</u> ج	į	2	. 60	18.	18-	18.	18-	1 11 10 00	18	18	17.	16	14	10	10	08	2 4	03	01	28	27	2 4 5	21-	20-	1 2	14	1 4 4	14	11	07	0 0	S	Ā (	ب 20 م	28	23
)-JUL-	-101- -101-	10T-	4-JUL-1	191	ij	ă ă	JUL	ij	JUN	ğ	NOC	ğ	ZON	ğ	ğ	ğ	JON N	ğ	- JUN-	NDF	NOL	JUN	-JUN-	NDC	10-JUN-	JUN :	, and a	-JUN-	3-JUN-	1-JUN-	YAM-	Š	MA	ě	-MAY-	- MAY	-MAY	14-MAY-1	-MAY	-MAY	YAM-	-MAY	-MA	MA S	AP	-AP	-APR
-1999; -1999; -1999;	1999	1999	1999	1999	1999	199	199	199	-199	199	-199 -199	199	-199 -199	-199	-199 9	-199	-199 9	-199	-199 -199	-199	-199 -199	-199	-199	-199	-199	-199	-199 261	-199	-199	-199	-199	-199	00 t-	-199	-199	-199 199	-199	-199 201-	-199	-199	-199 261-	199	-199	199	-199	-199	-199
99US-0144333. 99US-0144334. 99US-0144335.	3066 3066 3066	3066	3066	3066	9900	990	990	990	990:	990	990	990	066	990	990	990	D66	990	990	990	990	990	990	990	990	990	100	990	990	990	990	990	990	990	990	990	990	990	990	990	166	990	990	990	166	990	366
-014 -014	8-014 8-014	6-01	3-01	01	200	3-01	3-01	3-01	S-01	S-01	s-01	S-01	S-01 S-01	S-01	s-01 s-01	S-01	s-01 s-01	S-01	S-01	S-01	S-01	S-01	S-01	S-01	S-01	S-01	0-01	S-01	S-01	S-01	S-01	201	2 - 2	S-01	S-01	S-01	S-01	is-01	S-01	7S-01	S-01	- S	IS-01	S-01	JS-01	JS-0:	7.0
4334	4331	1408	1362	1354	1292	1239	1205	1184	1099	1082	4035 4069	4035	3989 3989	3976	3946 3975	3946	3946 3946	3945	3945	3945	3945	3949	3945	3911	3884	3854	2//2	3750	3752	3722	3678	200	200	3535	3512	3476	3437	3421	3421	3425	3286	.3248	3248	3246	320	1314	3080
						.0			7.	ω.	л 4-	ω	9.	. ω	ο ω		- 0		٥,			N .	·	9	7.	÷ د					2 :	3 F		ŭ	4 +	- &	Õ.	0 د	.80	ŏ .	. T	. 6	<u>ن</u>			9	7.
																				•																											
													10.																																		
		-	<del></del>									-	D.				-							-					-															-			
אק אק אק	PR	PR PR	7 R Q	PR	PR PR	PR	PR DB	PR	PR	PR	PR	PR	PR	קל	PR	PR	PR	PR	PR	PR	PR	PR	PR	אַק	אק	PR	PR	PR	PR	לא יי	PR	PR	PR	TOR.	PR	אַק	אַק	PR	PR	PR	PR						
14 14	1111	0807	05.5	29	24 28	23	20	16	12	10	01				) N) I	N) N:	) N) I	N) N)	K) L			. <u></u>	12	ــ د																							
13-0CT	1111	0807	05.5	29-SEP	24-SEP 28-SEP	23-SEP	20-SEP	16-SE	13-SE	10-SEP	01-SEP	30-AUG	27 - AUG	27-AUG 27-AUG	26-AUG	23 - AUG 25 - AUG	) N) I	N) N)	K) L			13-AU	12-AU	11-AU	09-AU	. 09-AU	06-AU	06-AC	05-AC	05 - AC	04-AU	03-AC	02-AU	02-AL	28-JU	27 - JU	27 - JI	26-มีเ	23-,71	23-Л	22-л	22-JI	22-JI	21-Ju	21-Ju	20-JU	20-JU
13-0CT-	12-0CT-	07-0CT-	05-0CT-	29-SEP-	24-SEP-	23-SEP-	20-SEP-	16-SEP-	13-SEP-	07-SEP-	01-SEP-	30-AUG-	27 - AUG-	27-AUG- 27-AUG-	26-AUG-	23 - AUG - 25 - AUG -	23-AUG-	20-AUG- 20-AUG-	20-AUG-	17-AUG-	16-AUG-	13-AUG-	12-AUG-	11-AUG-	09-AUG-	09-AUG-	06-AUG-	06-AUG-	05-AUG-	05 - AUG-	04 - AUG-	03-AUG-	02-AUG-	02 - AUG	28-JUL-	27 - JUL-	27 - JUL -	26-JUL	23 - JUL	23 - JUL	22-лиг	22-JUL	22-JUL	21-JUL	21-JUL	20-JUL	20-JUL
13-0CT-1999; 13-0CT-1999; 14-0CT-1999; 14-0CT-1999;	12-OCT-1999; 13-OCT-1999;	07-0CT-1999; 08-0CT-1999;	05-OCT-1999;	29-SEP-1999;	24-SEP-1999; 28-SEP-1999;	23-SEP-1999;	20-SEP-1999;	16-SEP-1999;	13-SEP-1999;	07-SEP-1999;	01-SEP-1999;	30-AUG-1999;	27-AUG-1999;	27-AUG-1999; 27-AUG-1999;	26-AUG-1999;	23-AUG-1999; 25-AUG-1999;	23-AUG-1999;	20-AUG-1999; 20-AUG-1999;	20-AUG-1999;	17-AUG-1999;	16-AUG-1999;	13-AUG-1999;	12-AUG-1999;	11-AUG-1999;	09-AUG-1999;	09-AUG-1999;	06-AUG-1999;	06-AUG-1999;	05-AUG-1999;	05-AUG-1999;	04-AUG-1999;	03-AUG-1999;	02-AUG-1999;	02-AUG-1999;	28-JUL-1999;	27-JUL-1999;	27-JUL-1999;	26-JUL-1999;	23-701-1999;	23-JUL-1999;	22-JUL-1999;	22-JUL-1999;	22-JUL-1999;	21-JUL-1999;	21-JUL-1999;	20-JUL-1999; 21-JUL-1999;	20-JUL-1999;
13-00T-1999; 13-00T-1999; 14-00T-1999; 14-00T-1999;	12-OCT-1999; 13-OCT-1999;	07-0CT-1999; 08-0CT-1999;	05-OCT-1999;	29-SEP-1999;	24-SEP-1999; 28-SEP-1999;	23-SEP-1999;	20-SEP-1999;	16-SEP-1999;	13-SEP-1999;	07-SEP-1999;	01-SEP-1999;	30-AUG-1999;	27-AUG-1999;	27-AUG-1999; 27-AUG-1999;	26-AUG-1999;	23-AUG-1999; 25-AUG-1999;	23-AUG-1999;	20-AUG-1999; 20-AUG-1999;	20-AUG-1999;	17-AUG-1999;	16-AUG-1999;	13-AUG-1999;	12-AUG-1999;	11-AUG-1999;	09-AUG-1999;	09-AUG-1999;	06-AUG-1999;	06-AUG-1999;	05-AUG-1999;	05-AUG-1999;	04-AUG-1999;	03-AUG-1999;	02-AUG-1999;	02-AUG-1999;	28-JUL-1999;	27-JUL-1999;	27-JUL-1999;	26-JUL-1999;	23-701-1999;	23-JUL-1999;	22-JUL-1999;	22-JUL-1999;	22-JUL-1999;	21-JUL-1999;	21-JUL-1999;	20-JUL-1999; 21-JUL-1999;	20-JUL-1999;
13-0CT-1999; 13-0CT-1999; 14-0CT-1999; 14-0CT-1999;	12-OCT-1999; 13-OCT-1999;	07-0CT-1999; 08-0CT-1999;	05-OCT-1999;	29-SEP-1999;	24-SEP-1999; 28-SEP-1999;	23-SEP-1999;	20-SEP-1999;	16-SEP-1999;	13-SEP-1999;	07-SEP-1999;	01-SEP-1999;	30-AUG-1999;	27-AUG-1999;	27-AUG-1999; 27-AUG-1999;	26-AUG-1999;	23-AUG-1999; 25-AUG-1999;	23-AUG-1999;	20-AUG-1999; 20-AUG-1999;	20-AUG-1999;	17-AUG-1999;	16-AUG-1999;	13-AUG-1999;	12-AUG-1999;	11-AUG-1999;	09-AUG-1999;	09-AUG-1999;	06-AUG-1999;	06-AUG-1999;	05-AUG-1999;	05-AUG-1999;	04-AUG-1999;	03-AUG-1999;	02-AUG-1999;	02-AUG-1999;	28-JUL-1999;	27-JUL-1999;	27-JUL-1999;	26-JUL-1999;	23-701-1999;	23-JUL-1999;	22-JUL-1999;	22-JUL-1999;	22-JUL-1999;	21-JUL-1999;	21-JUL-1999;	20-JUL-1999; 21-JUL-1999;	20-JUL-1999;
-007-1999; -007-1999; -007-1999; -007-1999;	12-OCT-1999; 13-OCT-1999;	07-0CT-1999; 08-0CT-1999;	05-OCT-1999;	29-SEP-1999;	24-SEP-1999; 28-SEP-1999;	23-SEP-1999;	20-SEP-1999;	16-SEP-1999;	13-SEP-1999;	07-SEP-1999;	01-SEP-1999;	30-AUG-1999;	27-AUG-1999;	27-AUG-1999; 27-AUG-1999;	26-AUG-1999;	23-AUG-1999; 25-AUG-1999;	23-AUG-1999;	20-AUG-1999; 20-AUG-1999;	20-AUG-1999;	17-AUG-1999;	16-AUG-1999;	13-AUG-1999;	12-AUG-1999;	11-AUG-1999;	09-AUG-1999;	09-AUG-1999;	06-AUG-1999;	06-AUG-1999;	05-AUG-1999;	05-AUG-1999;	04-AUG-1999;	03-AUG-1999;	02-AUG-1999;	02-AUG-1999;	28-JUL-1999;	27-JUL-1999;	27-JUL-1999;	26-JUL-1999;	23-701-1999;	23-JUL-1999;	22-JUL-1999;	22-JUL-1999;	22-JUL-1999;	21-JUL-1999;	21-JUL-1999;	20-JUL-1999; 21-JUL-1999;	20-JUL-1999;
13-0CT-1999; 13-0CT-1999; 14-0CT-1999; 14-0CT-1999;	12-OCT-1999; 13-OCT-1999;	07-0CT-1999; 08-0CT-1999;	05-OCT-1999;	29-SEP-1999;	24-SEP-1999; 28-SEP-1999;	23-SEP-1999;	20-SEP-1999;	16-SEP-1999;	13-SEP-1999;	07-SEP-1999;	01-SEP-1999;	30-AUG-1999;	27-AUG-1999;	27-AUG-1999; 27-AUG-1999;	26-AUG-1999;	23-AUG-1999; 25-AUG-1999;	23-AUG-1999;	20-AUG-1999; 20-AUG-1999;	20-AUG-1999;	17-AUG-1999;	16-AUG-1999;	13-AUG-1999;	12-AUG-1999;	11-AUG-1999;	09-AUG-1999;	09-AUG-1999;	06-AUG-1999;	06-AUG-1999;	05-AUG-1999;	05-AUG-1999;	04-AUG-1999;	03-AUG-1999;	02-AUG-1999;	02-AUG-1999;	28-JUL-1999;	27-JUL-1999;	27-JUL-1999;	26-JUL-1999;	23-701-1999;	23-JUL-1999;	22-JUL-1999;	22-JUL-1999;	22-JUL-1999;	21-JUL-1999;	21-JUL-1999;	20-JUL-1999; 21-JUL-1999;	20-JUL-1999;
13-0CT-	12-OCT-1999; 13-OCT-1999;	07-0CT-1999; 08-0CT-1999;	05-OCT-1999;	29-SEP-1999;	24-SEP-1999; 28-SEP-1999;	23-SEP-1999;	20-SEP-1999;	16-SEP-1999;	13-SEP-1999;	07-SEP-1999;	01-SEP-1999;	30-AUG-1999;	27-AUG-1999;	27-AUG-1999; 27-AUG-1999;	26-AUG-1999;	23-AUG-1999; 25-AUG-1999;	23-AUG-1999;	20-AUG-1999; 20-AUG-1999;	20-AUG-1999;	17-AUG-1999;	16-AUG-1999;	13-AUG-1999;	12-AUG-1999;	11-AUG-1999;	09-AUG-1999;	09-AUG-1999;	06-AUG-1999;	06-AUG-1999;	05-AUG-1999;	05-AUG-1999;	04-AUG-1999;	03-AUG-1999;	02-AUG-1999;	02-AUG-1999;	28-JUL-1999;	27-JUL-1999;	27-JUL-1999;	26-JUL-1999;	23-701-1999;	23-JUL-1999;	22-JUL-1999;	22-JUL-1999;	22-JUL-1999;	21-JUL-1999;	21-JUL-1999;	20-JUL-1999; 21-JUL-1999;	20-JUL-1999;
13-0CT-1999; 13-0CT-1999; 14-0CT-1999; 14-0CT-1999;	12-OCT-1999; 13-OCT-1999;	07-0CT-1999; 08-0CT-1999;	05-OCT-1999;	29-SEP-1999;	24-SEP-1999; 28-SEP-1999;	23-SEP-1999;	20-SEP-1999;	16-SEP-1999;	13-SEP-1999;	07-SEP-1999;	01-SEP-1999;	30-AUG-1999;	27-AUG-1999;	27-AUG-1999; 27-AUG-1999;	26-AUG-1999;	23-AUG-1999; 25-AUG-1999;	23-AUG-1999;	20-AUG-1999; 20-AUG-1999;	20-AUG-1999;	17-AUG-1999;	16-AUG-1999;	13-AUG-1999;	12-AUG-1999;	11-AUG-1999;	09-AUG-1999;	09-AUG-1999;	06-AUG-1999;	06-AUG-1999;	05-AUG-1999;	05-AUG-1999;	04-AUG-1999;	03-AUG-1999;	02-AUG-1999;	02-AUG-1999;	28-JUL-1999;	27-JUL-1999;	27-JUL-1999;	26-JUL-1999;	23-701-1999;	23-JUL-1999;	22-JUL-1999;	22-JUL-1999;	22-JUL-1999;	21-JUL-1999;	21-JUL-1999;	20-JUL-1999; 21-JUL-1999;	20-JUL-1999;
13-0CT-1999; 13-0CT-1999; 14-0CT-1999; 14-0CT-1999;	12-OCT-1999; 13-OCT-1999;	07-0CT-1999; 08-0CT-1999;	05-OCT-1999;	29-SEP-1999;	24-SEP-1999; 28-SEP-1999;	23-SEP-1999;	20-SEP-1999;	16-SEP-1999;	13-SEP-1999;	07-SEP-1999;	01-SEP-1999;	30-AUG-1999;	27-AUG-1999;	27-AUG-1999; 27-AUG-1999;	26-AUG-1999;	23-AUG-1999; 25-AUG-1999;	23-AUG-1999;	20-AUG-1999; 20-AUG-1999;	20-AUG-1999;	17-AUG-1999;	16-AUG-1999;	13-AUG-1999;	12-AUG-1999;	11-AUG-1999;	09-AUG-1999;	09-AUG-1999;	06-AUG-1999;	06-AUG-1999;	05-AUG-1999;	05-AUG-1999;	04-AUG-1999;	03-AUG-1999;	02-AUG-1999;	02-AUG-1999;	28-JUL-1999;	27-JUL-1999;	27-JUL-1999;	26-JUL-1999;	23-701-1999;	23-JUL-1999;	22-JUL-1999;	22-JUL-1999;	22-JUL-1999;	21-JUL-1999;	21-JUL-1999;	20-JUL-1999; 21-JUL-1999;	20-JUL-1999;

```
RRESULT 2
AAG18223
AAG18223
AC AAG1
XX AAG1
XX AAG1
XX AAG1
XX Prot
XX Prot
KW Prot
KW Hybr
KW term
XX term
XX Term
XX Arab
PN EP10
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX Arab
XX
                                                                                                                                                                                                                                                                                                                                                                                                                                    δõ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DP GA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    뮍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          δÃ

        7

        7

        7

        7

        7

        7

        7

        7

        7

        8

        8

        9

        8

        9

        8

        9

        8

        9

        8

        9

        8

        9

        8

        9

        8

        9

        9

        9

        9

        9

        9

        9

        9

        9

        9

        9

        9

        9

        9

        9

        9

        9

        9

        9

        9

        9

        9

        9

        9

        9

        9

        9

        9

        10

                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
Best Local Sim
Matches 253;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        14-OCT 1999
14-OCT 1999
11-OCT 1999
21-OCT 1999
22-OCT 1999
23-OCT 1999
24-OCT 1999
26-OCT 1999
28-OCT 1999
28-OCT 1999
28-OCT 1999
28-OCT 1999
28-OCT 1999
   25-FEB-1999;
05-MAR-1999;
                                                                               06-SEP-2000
                                                                                                            EP1033405-A2
                                                                                                                                          Arabidopsis thaliana.
                                                                                                                                                                    Protein identification; signal transduction pathway; metabolic hybridisation assay; genetic mapping; gene expression control; termination sequence.
                                                                                                                                                                                                                                   Arabidopsis thaliana protein fragment SEQ ID NO: 19545.
                                                                                                                                                                                                                                                                       17-OCT-2000
                                                                                                                                                                                                                                                                                                      AAG18223;
                                                                                                                                                                                                                                                                                                                                 AAG18223 standard;
                                                25-FEB-2000;
                                                                                                                                                                                                                                                                                                                                                                                                               311
                                                                                                                                                                                                                                                                                                                                                                                                                                            317
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      191
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           251
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         257
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     197
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    131
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 137
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                77
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ETRPWDLTGQFIG 329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STNVNIVVLDLNPLHQLTDQTDYQDKYYNKIMSIYHKYAETFPWGGKLTGESIKFFSPLV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STNVNIVVLDLNPLHQLTDQTDYQDKYYNKIMSIYHKYAETFPWGGKLTGESIKFFSPLV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       76.98; nilarity 100.08; Conservative 0
                                                                                                                                                                                                                                                                  (first entry)
                                                2000EP-0301439
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        990S-0159331

990S-0159538

990S-0159584

990S-01607767

990S-0160768

990S-0160814

990S-0160815

990S-0160815

990S-0160980

990S-0160980

990S-0161404

990S-0161406

990S-0161406

990S-0161406

990S-0161359

990S-0161359

990S-0161351

990S-0161351

990S-0161351

990S-0161352

990S-0161393

990S-0161920
   99US-0121825
99US-0123180
                                                                                                                                                                                                                                                                                                                                 Protein;
                                                                                                                                                                                                                                                                                                                                   327
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 253; DB 21; 1
Pred. No. 1.6e-242;
0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                   A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 323;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0;
                                                                                                                                                                                     pathway;
promoter;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     316
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               196
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              130
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      250
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     256
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0
   09-MAR-1999,
23-MAR-1999,
25-MAR-1999,
29-MAR-1999,
01-APR-1999,
06-APR-1999,
08-APR-1999,
16-APR-1999,
19-APR-1999,
 24 JUN 1999;
28 JUN 1999;
29 JUN 1999;
30 JUN 1999;
01 JUL 1999;
01 JUL 1999;
02 JUL 1999;
06 JUL 1999;
08 JUL 1999;
11 JUL 1999;
13 JUL 1999;
14 JUL 1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     06-MAY-1999;
06-MAY-1999;
07-MAY-1999;
111-MAY-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               19-APR-1999;
21-APR-1999;
23-APR-1999;
23-APR-1999;
28-APR-1999;
30-APR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     08-JUN-1999;
10-JUN-1999;
10-JUN-1999;
14-JUN-1999;
16-JUN-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   30-APR-1999;
04-MAY-1999;
05-MAY-1999;
                                                                                                                                                                                                    18-JUN-1999
18-JUN-1999
18-JUN-1999
18-JUN-1999
18-JUN-1999
18-JUN-1999
18-JUN-1999
18-JUN-1999
18-JUN-1999
18-JUN-1999
18-JUN-1999
23-JUN-1999
23-JUN-1999
23-JUN-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         14-MAY-1999;
18-MAY-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                         16-JUN-1999;
17-JUN-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   04-JUN-1999;
07-JUN-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        14-MAY-1999;
14-MAY-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                03-JUN-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 01-JUN-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 28-MAY-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              25-MAY-1999;
27-MAY-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             21-MAY-1999;
24-MAY-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             20-MAY-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         14-MAY-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          9-MAY-1999
9908-012548
9908-0126785
9908-0126785
9908-0126785
9908-0126744
9908-0130449
9908-0130449
9908-0130449
9908-0130480
9908-0131449
9908-0132486
9908-0132486
9908-0132487
9908-0132487
9908-0132486
9908-0132487
9908-0132487
9908-0132487
9908-0132487
9908-0132487
9908-0132487
9908-0132487
9908-0132487
9908-0134221
9908-0134221
9908-0134221
9908-0134221
9908-0134221
9908-0134221
9908-013423
9908-013423
9908-013423
9908-0139453
9908-0139453
9908-0139453
9908-0139453
9908-0139453
9908-0139453
9908-0139453
9908-0139453
9908-0139453
9908-0139453
9908-0139453
9908-0139453
9908-0139453
9908-0139453
9908-0139453
9908-0139453
9908-0139453
9908-0139453
9908-0139453
9908-0139453
9908-0140893
9908-0140893
9908-0140893
9908-014287
9908-014287
9908-014287
9908-014287
9908-014287
```

15-JUL-1999 16-JUL-1999 16-JUL-1999 19-JUL-1999 19-JUL-1999 19-JUL-1999 19-JUL-1999 19-JUL-1999

99US-014405.
99US-0144086.
99US-0144325.
99US-0144332.
99US-0144333.
99US-0144333.
99US-0144335.
99US-0144335.
99US-014435.
99US-014435.
99US-014485.
99US-014486.

99US-0145088.
99US-0145087.
99US-0145087.
99US-0145192.
99US-0145128.
99US-0145218.
99US-0145218.
99US-0145218.
99US-0145213.
99US-0145913.
99US-0145913.
99US-0145918.
99US-0145918.
99US-0145918.

```
RESULT 3
AAG18225
                                                                                                                                                                                                                                                                                                             Qy
                                                                                                                                                                                                                                                                                              В
                                                                                                                                                                                                                                                                                                                                                                     뫄
                                                                                                                                                                    δõ
                                                                                                                                                                                     В
                                                                                                                                                                                                     Ş
                                                                                                                                                                                                                        B
                                                                                                                                                                                                                                        Š
                                                                                                                                                                                                                                                           멍
                                                                                                                                                                                                                                                                           Š
                                                                                                                                                                                                                                                                                                                              Query Match 76.9%; Street Local Similarity 100.0%; I Matches 253; Conservative 0;
                                                                                                                                                                                                                                                                                                                                                                   25-OCT-1999;
25-OCT-1999;
26-OCT-1999;
26-OCT-1999;
26-OCT-1999;
28-OCT-1999;
28-OCT-1999;
28-OCT-1999;
29-OCT-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   21-OCT-1999;
21-OCT-1999;
21-OCT-1999;
               Protein identification; signal transduction pathway; metabolic pathway; hybridisation assay; genetic mapping; gene expression control; promoter; termination sequence.
                                                                                                        AAG18225
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      06-OCT-1999;
07-OCT-1999;
                                                    Arabidopsis
                                                                     17-OCT-2000
                                                                                       AAG18225;
                                                                                                                                                                                                                                                                                                                                                                                                                                                222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       21-OCT-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   14-0CT-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          14-0CT-1999;
14-0CT-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                14-0CT-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         L4-OCT-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              -OCT-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                 -OCT-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  -OCT-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               -OCT-1999;
                                                                                                                                                                                                                                          197
                                                                                                                                                                     317
                                                                                                                                                                                                                         195
                                                                                                                                                                                                                                                            135
                                                                                                                                                                                                                                                                             137
                                                                                                                                                    315
                                                                                                                                                                                      255
                                                                                                                                                                                                       257
                                                                                                                                                                                                                                                                                                                77
                                                                                                                                                                                                                                                                                              75
                                                                                                                                                                                                                                                                                             standard;
                                                                                                                                                            ETRPWDLTGQFIG 329
                                                                                                                                                                                    MWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRANCEAQHKYLTWRAQKD
                                                                                                                                                                                                                                                                    STNVNIVYLDLNPLHQLTDQTDYQDKYYNKIMSIYHKYAETFPWGGKLTGESIKFFSPLV
                                                                                                                                                   ETRPWDLTGQFIG
                                                                                                                                                                                                                         MWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRANCEAQHKYLTWRAQKD
                                                                                                                                                                                                                                                           STNVNIVVLDLNPLHQLTDQTDYQDKYYNKIMSIYHKYAETFPWGGKLTGESIKFFSPLV
                                                    thaliana protein
                                                                     (first entry)
                                                                                                                                                                                                                                                                                                                                                                  990S-0157865

990S-0158232

990S-0158369

990S-0159294

990S-0159295

990S-0159295

990S-0159330

990S-0159330

990S-0159331

990S-0159384

990S-0160747

990S-0160767

990S-0160767

990S-0160768

990S-0160768

990S-0160769

990S-0160769

990S-0160814

990S-0160815

990S-0161405

990S-0161405

990S-0161406

990S-0161406

990S-0161359

990S-0161359

990S-0161359

990S-0161361

990S-0161361

990S-0161361

990S-0161361

990S-0161361

990S-0161361
                                                                                                        Protein;
                                                                                                                                                   327
                                                                                                         250
                                                                                                                                                                                                                                                                                                                               Score 253; DB 21;
Pred. No. 1.6e-242;
0; Mismatches 0;
                                                    fragment SEQ ID NO: 19547.
                                                                                                         A
                                                                                                                                                                                                                                                                                                                                                Length 327;
                                                                                                                                                                                                                                                                                                                                 Indels
                                                                                                                                                                                                                                                                                                                               0;
                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                       316
                                                                                                                                                                                                                                           256
                                                                                                                                                                                                                                                            194
                                                                                                                                                                                                                                                                             196
                                                                                                                                                                                                                                                                                               134
                                                                                                                                                                                                                         254
                                                                                                                                                                                                                                                                                                                                 0
```

9908-0146389 9908-0147204 9908-0147302 9908-0147303 9908-0147426 9908-01474303 9908-0147433 9908-0147433 9908-0147433 9908-014831 9908-0148341 9908-0148341 9908-0148341 9908-0148341 9908-0148341 9908-0148343 9908-0149368 9908-0149368 9908-0149426 9908-0149722 9908-0149723 9908-0149723 9908-0149723 9908-0149723 9908-0149368 9908-0149369 9908-0149369

20-JUL-1999
20-JUL-1999
20-JUL-1999
21-JUL-1999
21-JUL-1999
21-JUL-1999
22-JUL-1999
22-JUL-1999
22-JUL-1999
22-JUL-1999
22-JUL-1999
22-JUL-1999
22-JUL-1999
22-JUL-1999
22-JUL-1999
23-JUL-1999
23-JUL-1999
24-JUL-1999
27-JUL-1999
27-JUL-1999
28-JUL-1999
29-AUG-1999
20-AUG-1999
20-AUG-1999
20-AUG-1999
21-AUG-1999

10-SEP-1999 13-SEP-1999 15-SEP-1999 16-SEP-1999 20-SEP-1999 23-SEP-1999 24-SEP-1999 24-SEP-1999 28-SEP-1999 04-OCT-1999 05-OCT-1999

9905 0151065 9905 0151066 9905 015100 9905 0151103 9905 015133 9905 0152363 9905 0152363 9905 0153070 9905 0153758 9905 0154018 9905 0154479 9905 0155489 9905 0155589 9905 015559 9905 015559 9905 015559 9905 0156458 9905 0156458

Ø

Arabidopsis thaliana

א קי א אין א אין א מי מי מי מי מי מי מי מי מי מי מי מי מי
EP1033405-A2.  06-SEP-2000.  25-FEB-2000;  25-FEB-1999;  05-MAR-1999;  09-MAR-1999;  09-MAR-1999;  09-MAR-1999;  01-APR-1999;  16-APR-1999;  16-APR-1999;  21-APR-1999;  21-MAY-1999;  21-JUN-1999;  22-JUN-1999;  23-JUN-1999;  24-JUN-1999;  23-JUN-1999;  24-JUN-1999;  23-JUN-1999;  24-JUN-1999;  23-JUN-1999;  24-JUN-1999;  23-JUN-1999;  24-JUN-1999;  24-JUN-1999;  25-JUN-1999;  26-JUN-1999;  27-JUN-1999;  28-JUN-1999;  29-JUN-1999;  20-JUN-1999;  2
2000EP-0301439. 99US-0121825. 99US-0123548. 99US-0125788. 99US-0126785. 99US-0126785. 99US-0126785. 99US-0126785. 99US-0126785. 99US-0132846. 99US-0132487. 99US-0132487. 99US-0132487. 99US-0132487. 99US-0132487. 99US-0132487. 99US-0132487. 99US-0134219. 99US-0134218. 99US-0134219. 99US-0139453.
~~ ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
01-JUL-1999 02-JUL-1999 06-JUL-1999 08-JUL-1999 12-JUL-1999 11-JUL-1999 11-JUL-1999 11-JUL-1999 11-JUL-1999 11-JUL-1999 11-JUL-1999 11-JUL-1999 11-JUL-1999 11-JUL-1999 11-JUL-1999 11-JUL-1999 11-JUL-1999 11-JUL-1999 12-JUL-1999 13-JU
99US-0141842. 99US-0142154. 99US-0142350. 99US-0142390. 99US-0142970. 99US-0144085. 99US-0144085. 99US-0144085. 99US-0144085. 99US-0144085. 99US-0144332. 99US-0144333. 99US-0144333. 99US-0144333. 99US-0144333. 99US-0144333. 99US-0144333. 99US-0144333. 99US-0144333. 99US-0144334. 99US-0144338. 99US-0145913. 99US-0145913. 99US-0147308. 99US-0147308. 99US-0147308. 99US-0147308. 99US-0147308. 99US-0147308. 99US-0147308. 99US-0147308. 99US-0147303. 99US-0147308. 99US-0147308. 99US-0149722. 99US-0149723. 99US-0149723. 99US-014902. 99US-014902. 99US-014902. 99US-014902. 99US-014902. 99US-014902. 99US-0151066. 99US-0151066. 99US-0151068. 99US-0151068. 99US-0151068. 99US-0151068. 99US-0151068. 99US-0151068. 99US-015303. 99US-015303. 99US-0153758.

```
RESULT 4
AAM50863
ID AAM5
XX
AC AAM5
XX
                                                   밁
                                                             δÃ
                                                                            밁
                                                                                       Qy
                                                                                                     밁
                                                                                                                 Qy
                                                                                                                                          Qy
                                                                                                                               밁
                                                                                                                                                          뮹
                                                                                                                                                                     Ş
                                                                                                                                                                                                             Query Match
Best Local
                                                                                                                                                                                    Matches
                                                                                                                                                                                                                                          25-OCT-1999;
25-OCT-1999;
25-OCT-1999;
26-OCT-1999;
26-OCT-1999;
                                                                                                                                                                                                                                                                          21-OCT-1999;
21-OCT-1999;
22-OCT-1999;
22-OCT-1999;
22-OCT-1999;
                                                                                                                                                                                                                                                                                                                                                                                  08-OCT-1999;
12-OCT-1999;
13-OCT-1999;
13-OCT-1999;
                                                                                                                                                                                                                                                                                                                                                                                                            05-OCT-1999;
06-OCT-1999;
07-OCT-1999;
      AAM50863;
                                                                                                                                                                                                                                                                                                           21-OCT-1
21-OCT-1
                                                                                                                                                                                                                                                                                                                                    14-OCT-1999;
18-OCT-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                              28-SEP-
29-SEP-
04-OCT-
                                                                                                                                                                                                                                                                                                                                                                                                                                                              16-SEP-1999;
20-SEP-1999;
22-SEP-1999;
                  AAM50863 standard;
                                                                                                                                                                                                                                26-OCT-1999
28-OCT-1999
                                                                                                                                                                                                                                                                                                                        21-OCT-1999;
21-OCT-1999;
                                                                                                                                                                                                                                                                                                                                                  14-OCT-1999;
14-OCT-1999;
                                                                                                                                                                                                                                                                                                                                                              14-OCT-1999
                                                                                                                                                                                                                                                                                                                                                                     13-OCT-1999;
14-OCT-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                  1-SEP-1
                                                                                                                                                                                                                                                                                                                                                                                                                               -OCT-1999
                                                   241
                                                              320
                                                                            181
                                                                                                     121
                                                                                                                                             140
                                                                                                                               61
                                                                                                                                                                                   250;
                                                                                                                                                                      80
                                                                                                                                                          Н
                                                                                                                                                                                         Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                    1999
                                                                                 GLLKRLVGEAKAKELLRDFLFNGVDELGTKTFIDYFPEYQTEDGTVSDKRSIIGKSYETR
                                                                                                          RESSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRANCEAQHKYLTWRAQKDPGH
                                                                                                                             VNIVVLDLNPLHQLTDQTDYQDKYYNKIMSIYHKYAETFPWGGKLTGESIKFFSPLVMWT
                                                                                                                                    PWDLTGQFIG
                                                         PWDLTGQFIG 329
                                                                          GLLKRLVGEAKAKELLRDFLFNGVDELGTKTFIDYFPEYQTEDGTVSDKRSIIGKSYETR
                                                                                                   RFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRANCEAQHKYLTWRAQKDPGH
                                                                                                                                                        MTGLDGKTELQMLAFKSSKIRLLRSMAIENETMQVFDFAGFMEPEYDTPIFCANFFTSTN
                                                                                                                                                               MTGLDGKTELQMLAFKSSKIRLLRSMAIENETMQVFDFAGFMEPEYDTPIFCANFFTSTN
                                                                                                                                                                                  Conservative
                                                                                                                                                                                                           990S-0160980.
990S-0160981.
990S-0160981.
990S-0161404.
990S-0161405.
990S-0161359.
990S-0161361.
990S-0161361.
990S-0161393.
990S-0161920.
990S-0161993.
                                                                                                                                                                                                                                                                                                                                                                                                                                                              99US-0154039.
99US-0154779.
99US-0155139.
                                                                                                                                                                                                                                                                                                                                     99US-0159638.
99US-0159584.
                                                                                                                                                                                                                                                                                              99US-0160814.
                                                                                                                                                                                                                                                                                                           99US-0160768.
99US-0160770.
                                                                                                                                                                                                                                                                                                                       99US-0160741.
99US-0160767.
                                                                                                                                                                                                                                                                                                                                                  990S-0159331.
990S-0159637.
                                                                                                                                                                                                                                                                                                                                                                     99US-0159329
                                                                                                                                                                                                                                                                                                                                                                           9905-0159295
                                                                                                                                                                                                                                                                                                                                                                                         9908-0159293
                                                                                                                                                                                                                                                                                                                                                                                                      99US-0158232
                                                                                                                                                                                                                                                                                                                                                                                                            99US-0158029
                                                                                                                                                                                                                                                                                                                                                                                                                   990S-0157865
                                                                                                                                                                                                                                                                                                                                                                                                                          99US-0157753
                                                                                                                                                                                                                                                                                                                                                                                                                                99US-0157117
                  Protein;
                                                  250
                                                                                                                                                                                        76.0%;
                                                                                                                                                                                  0;
                                                                                                                                                                                        Score 250;
Pred. No.
                                                                                                                                                                                  Mismatches
                                                                                                                                                                                        1.2e-239;
                                                                                                                                                                                               DB
                                                                                                                                                                                  0,
                                                                                                                                                                                              Length 250;
                                                                                                                                                                                  Indels
                                                                                                                                                                                 0;
                                                                                                                                                                                 Gaps
                                                                          240
                                                                                                   180
                                                                                                                259
                                                                                                                             120
                                                                                                                                          199
                                                                                                                                                        60
                                                                                                                                                                                0
                                                                                밁
               Q
                            밁
                                       δÃ
                                                       Matches
```

61

ETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIENETMQVFDFAGF ETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIENETMQVFDFAGF

> 120 9 60

61

Indels

0;

Gaps

```
amino acid residues are predicted to form a chloroplast transit
c peptide, suggesting that the HYZ protein is localised in the
chloroplast. HYZ is related to a family of proteins found in
coxygenic photosynthetic bacteria. It is an example of bilin
reductases of the invention, which are useful e.g. for the
conversion of biliverdin to phytobilin and the assembly of
holophytochromes or phytofiluors. A claimed method of producing
a photoactive holophytochrome involves co-expressing a haem
coxygenase, an apophytochrome and a ferredoxin-dependent bilin
reductase in a cell, where the cell produces the photoactive
holophytochrome and where the apophytochrome and/or the
bilin reductase are expressed by heterologous nucleic acids.
The cell may be an algal, yeast, bacterial, plant, insect or
mammalian cell, and the bilin reductase is preferably an HY2
                                 Query Match
Best Local :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             08-JUN-2000;
26-FEB-2001;
29-MAY-2001;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           The present sequence is that of the HY2 protein of Arabidopsis thaliana ecotype Columbia, as predicted from CDNA sequence analysis. HY2 is a ferredoxin-dependent biliverdin reductase that has phytochromobilin synthase activity. The 329-amino acid protein has a predicted molecular mass of 38.1 kDa. The first 45 N-terminal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Novel isolated HY2 family bilin reductase having bilin reductase activity, useful for converting biliverdin to phytobilin, and for producing a photoactive holophytochrome and/or phytofluor -
                                                                                                              Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Example 3; Fig 3B; 102pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WPI; 2002-195566/25.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            05-JUN-2001;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        N-PSDB; ABA91766.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Key
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              07-MAY-2002 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Lagarias JC,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    13-DEC-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          WO200194548-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Arabidopsis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        HY2; biliverdin reductase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Arabidopsis phytochromobilin synthase HY2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Peptide
                               Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ) UNIV CALIFORNIA.
     l Similarity 99.
                                                                                                                                                                    bilin reductase.
                                                                                                              329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2000US-210286P.
2001US-271758P.
2001US-0210286.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               thaliana
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2001WO-US18326
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               phytofluor; plant;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Kochi T,
                                                                                                                 A,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /label=_Mature_protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /label= Transit_peptide
                            37.4%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Frankenberg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        phytochromobilin
Score 123; DB 23;
Pred. No. 1.8e-113;
0; Mismatches 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               enzyme.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ž
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gambetta GA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     synthase;
                                                     Length 329;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Montgomery
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       BL;
```

밁 Q 밁 8

> 181 121 121

> > MEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTDYQDKYYNKIMSIYHKYAETFPW

180 180

XXXXX

밁 Q HEPEYDTPIFCANFETSTNVNIVVLDLNPLHQLTDQTDYQDKYYNKIMSIYHKYAETFPW

```
RESULT 5
AAU39567
                           CC polypeptides may be used as antigens in the proteins and extremely inmunoyers.

CC the treatment, prevention and diagnosis of medical conditions caused by CP acnes. The disorders include SAPHO syndrome (synovitis, acne, pustulosis, hypertosis and osteomyelitis), uveitis and endopthalmitis.

CC pustulosis, hypertosis and osteomyelitis), uveitis and endopthalmitis.

CC P. acnes is also involved in infections of bone, joints and the central control of the central control of the central control of the inflammatory lesions associated with acne vulgaris. A method for detecting the compresence or absence of P. acnes in a patient comprises contacting a consider of the amount of bound protein in the sample. The consider of the invention conditions and determining the amount of bound protein in the sample. The conjugate expression and activity of P. acnes polypeptides and consequilate expression and activity of P. acnes polypeptides and consequilate expression and activity of P. acnes polypeptides and consequilate expression and activity of P. acnes polypeptides and consequence data for this patent did not form part of the printed consequence consequence of the printed consequence of the consequence of the consequence of the printed consequence of the consequence of the consequence of the consequence of the printed consequence of the consequence of the consequence of the consequence of the consequence of the consequence of the consequence of the consequence of the consequence of the consequence of the consequence of the consequence of the consequence of the consequence of the consequence of the consequence of the consequence of the consequence of the consequence of the consequence of the consequence of the consequence of the consequence of the con
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    21-APR-2000;
02-JUN-2000;
07-JUL-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Propionibacterium acnes polypeptides and nucleic acids useful for vaccinating against and diagnosing infections, especially useful for treating acne vulgaris -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SAPHO syndrome; synovitis; acne; pustulosis; hypertosis; osteomyelitis; uveitis; endophthalmitis; bone; joint; central nervous system; ELISA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequences AAU39105-AAU68017 represent Propionibacterium acnes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Example 1; SEQ ID No 762; 1069pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      WPI;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                L'maisonneuve
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Skeiky YAW,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (CORI-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    20-APR-2001; 2001WO-US12865.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                01-NOV-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   WO200181581-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Propionibacterium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              dermatological;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          uveitis; endophthalmitis; bone; joint; central nervous system; inflammatory lesion; acne vulgaris; enzyme linked immunosorbent
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Propionibacterium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          13-FEB-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAU39567
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AAU39567 standard; Protein;
ftp.wipo.int/pub/published_pct_sequences
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2001-616774/71.
DB; AAS59507.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CORIXA CORP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GGKLTGESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLE 224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GGKLTGESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLE 224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ; 2000US-199047P.
; 2000US-208841P.
; 2000US-216747P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Persing DH,
e J, Zhang '
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         osteopathic; neuroprotectant.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         acnes immunogenic protein #463
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ۲,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Mitcham ,
Jen S,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         163
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            JL, Wang SS, Carter D;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Bhatia A;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       are used in
```

Sequence

163

31-MAY-2002 ABB91133;

(first entry)

```
RESULT 7
ABB91133
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 6
ABB09063
ID ABB
                                                                                                                                                                          В
                                                                                                            δÃ
DXXXI
                                                                                                                                 Matches
                                                                                                                                          Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local
                                                                                                                                                                                         The present invention describes the nucleotide sequence of the cosmid clone 3 isolated from Thermus caldophilus GR24, as given in the present invention. Proteins encoded by the cosmid clone 3 are heat resistant enzymes which can be used in the fields of cosmetic and food industries. Thermus caldophilus GR24 has the optimal growth temperature of 72 plus degrees Celsius and produces heat resistant enzymes including DNA polymerase, aqualysin I, and beta-galactosidase. The DNA polymerase can effectively be used in PCR which is performed at high temperature. The present sequence represents a Thermus caldophilus GR24 cosmid clone 3 related protein from the present invention.
                                                                                                                                                                                                                                                                                                                           Base sequence and amino thermus caldophilus -
                                                                                                                                                                                                                                                                                                        Example 2; Page 116; 130pp; Korean
                                                                                                                                                                                                                                                                                                                                                                                          Cho
                                                                                                                                                                                                                                                                                                                                                                                                                                31-AUG-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DNA
                                       ABB91133 standard; Protein;
                                                                                                                                                                         Sequence
                                                                                                                                                                                                                                                                                                                                                            WPI; 2001-512441/56.
                                                                                                                                                                                                                                                                                                                                                                                 Ko SH,
                                                                                                                                                                                                                                                                                                                                                                                                                                                    31-AUG-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         15-MAR-2001.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             KR2001019888-A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Thermus caldophilus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Thermus caldophilus GK24;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Thermus caldophilus GK24 cosmid clone 3 related
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      26-JUN-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ABB09063;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ABB09063 standard;
                                                                                                                                                                                                                                                                                                                                                                                                              (KORE-)
                                                                                                                                Local Similarity
nes 8; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    polymerase;
                                                                                          253
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    303 GTVSDKRS
                                                                                                            40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 29
                                                                                                                                                                                                                                                                                                                                                                               Jung By
Lee DS,
                                                                                                                                                                                                                                                                                                                                                                                                              KOREA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Similarity
8; Conserv
                                                                                                             KRFLLRVS 47
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GTVSDKRS
                                                                                                                                                                         263 AA;
                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (first
                                                                                                                                                                                                                                                                                                                                                                                          BW,
                                                                                                                                                                                                                                                                                                                                                                                                              RES INST BIOSCIENCE & BIOTECHNOLOG
                                                                                                                                                                                                                                                                                                                                                                                                                                 99KR-0036564
                                                                                                                                                                                                                                                                                                                                                                                                                                                    99KR-0036564
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    aqualysin
                                                                                                                                                                                                                                                                                                                                                                                Lee
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   310
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 36
                                                                                                                                                                                                                                                                                                                                                                                          Kim HJ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2.4%;
                                                                                                                                           100.0%;
                                                                                                                                                                                                                                                                                                                                                                                JS,
                                                                                                                                                                                                                                                                                                                                        acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    heat resistant enzyme;
I; beta-galactosidase.
                                                                                                                                                                                                                                                                                                                                                                                Park JA,
                                                                                                                                                                                                                                                                                                                                                                                      Kim JS,
                                        554
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               263
                                                                                                                                0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score 8;
Pred. No.
                                                                                                                                           Score 8;
Pred. No.
                                                                                                                                                                                                                                                                                                                                        sequence
                                                                                                                                ore 8; DB 22;
ored. No. 20;
Mismatches
                                       ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ₿
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Mismatches
                                                                                                                                                                                                                                                                                                                                                                                 Park
                                                                                                                                                                                                                                                                                                                                                                                         Kim
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DB
13;
                                                                                                                                                                                                                                                                                                                                        of
                                                                                                                                                                                                                                                                                                                                                                               'HĽ
                                                                                                                                                                                                                                                                                                                                         cosmid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            22;
                                                                                                                                                                                                                                                                                                                                                                                Kim SY,
Shin HJ;
                                                                                                                                0;
                                                                                                                                                    Length 263
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 163
                                                                                                                                                                                                                                                                                                                                        clone
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               cosmetic;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                 Indels
                                                                                                                                                                                                                                                                                                                                        w
                                                                                                                                                                                                                                                                                                                                                                                          Kin
                                                                                                                                                                                                                                                                                                                                         isolated
                                                                                                                                                                                                                                                                                                                                                                                          YS,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               food;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       0;
                                                                                                                                0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                          õ
                                                                                                                                                                                                                                                                                                                                         from
                                                                                                                                                                                                                                                                                                                                                                                          HĽ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0
                                                                                                                                0;
```

```
RESULT 8
ABG15871
ID ABG1
XX ABG15871
XX ABG1
XX IB-F
DT 18-F
DT 11-C
XX HUMB
PR 31-P
PR 31-P
PR 31-P
                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                           Š
                                                                                                                                                                                                                                                                                                                                                                     Matches
                                                                                                                                                                                                                                                                                                                                                                                           Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                      The invention relates to identifying target proteins (ABB90790-ABB94016) for herbicidally active compounds, comprising aligning and comparing nucleic acid or amino acid sequences from plant with nucleic acid or amino acid sequences from non-plant organisms using suitable search parameters, where plant sequences having an E-value greater by a factor of 3 than the E-value of most similar non-plant sequences are selected. The polypeptides or nucleic acids encoding them are useful for identifying modulators. The identified modulators are
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Identifying plant target proteins for herbicidally active compounds, comprising aligning and comparing nucleic acid or amino acid sequences from plant with nucleic acid or amino acid sequences from non-plant organisms -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Tietjen K, Weidler M;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                28-AUG-2001; 2001WO-EP09892
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          07-FEB-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 WO200210210-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Arabidopsis thaliana.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Claim 5; SEQ ID NO 344; 261pp +
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WPI;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           28-AUG-2001; 2001WO-EP09892
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Herbicidal; plant; agriculture; herbicide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Herbicidally active polypeptide SEQ ID NO
                                                                                                                                                 food
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (FARB ) BAYER AG
            31-MAR-2000;
23-AUG-2000;
                                                30-MAR-2001; 2001WO-US08631.
                                                                        11-OCT-2001
                                                                                               WO200175067-A2
                                                                                                                      Homo sapiens
                                                                                                                                                             Human;
                                                                                                                                                                                  Novel human diagnostic protein #15862.
                                                                                                                                                                                                             18-FEB-2002
                                                                                                                                                                                                                                    ABG15871;
                                                                                                                                                                                                                                                           ABG15871 standard; Protein; 628
                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence
                                                                                                                                                                                                                                                                                                                                                                                 Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2002-269010/31
                                                                                                                                               supplement;
                                                                                                                                                                                                                                                                                                                      334 LLRDFLFN 341
                                                                                                                                                                                                                                                                                                                                             274 LLRDFLFN 281
                                                                                                                                                           chromosome
                                                                                                                                                                                                                                                                                                                                                                     Similarity
8; Conser
                                                                                                                                                                                                                                                                                                                                                                                                                                            herbicides
                                                                                                                                                                                                                                                                                                                                                                                                                      554
                                                                                                                                                                                                                                                                                                                                                                     Conservative
              2000US-0540217
2000US-0649167
                                                                                                                                                                                                           (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                      A
                                                                                                                                                 medical in
                                                                                                                                                                                                                                                                                                                                                                                2.4%;
                                                                                                                                                                                                                                                                                                                                                                ).0$;
0;
                                                                                                                                                j; gene mapping; gene therapy;
imaging; diagnostic; genetic ;
                                                                                                                                                                                                                                                                                                                                                                     Score 8; DB 2
Pred. No. 39;
0; Mismatches
                                                                                                                                                                                                                                                             B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence Listing;
                                                                                                                                                                                                                                                                                                                                                                             DB
39;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        344.
                                                                                                                                                                                                                                                                                                                                                                                              23;
                                                                                                                                                                                                                                                                                                                                                                       0;
                                                                                                                                                                                                                                                                                                                                                                                            Length 554
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 English.
                                                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                 disorder.
                                                                                                                                                                                                                                                                                                                                                                       0;
                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                       0
```

```
CC polymerase chain reaction (PCR) primers, oligomers, and for fromosome CC polymerase chain reaction (PCR) primers, oligomers, and for chromosome CC and gene mapping, and in recombinant production of (II). The polymucleotides are also used in diagnostics as expressed sequence tags CC for identifying expressed genes. (I) is useful in gene therapy techniques CC (II). (II) is useful for generating antibodies against it, detecting or CC (II). (II) is useful for generating antibodies against it, detecting or CC quantitating a polypeptide in tissue, as molecular weight markers and as CC a food supplement. (II) and its binding partners are useful in medical CC imaging of sites expressing (II). (I) and (II) are useful for treating CC imaging of sites expressing (II). (I) and (II) are useful for treating CC diagnostics, forensics, gene mapping, identification of mutations CC responsible for genetic disorders or other traits to assess biodiversity CC and to produce other types of data and products dependent on DNA and CC amino acid sequences. ABG00010-ABG30377 represent novel human CC diagnostic amino acid sequences of the invention of the printed
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 New isolated polynucleotide and encoded polypeptides, useful in diagnostics, forensics, gene mapping, identification of mutations responsible for genetic disorders or other traits and to assess biodiversity -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  WPI; 2001-639362/73
N-PSDB; AAS80058.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               The invention relates to isolated polynucleotide (I) and polypeptide (II) sequences. (I) is useful as hybridisation probes.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              biodiversity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Drmanac RT,
Sequence
                                                                    specification,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Claim 20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (HYSE-) HYSEQ INC.
                                            ftp.wipo.int/pub/published_pct_sequences
                                                                    The sequence data for this patent did not appear in the fication, but was obtained in electronic format directly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQ ID No 46230; 103pp; English
    628
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Liu C,
    ĀΑ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             sequences. (I)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Tang
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         YT;
                                                                            printed
from WIPO
```

```
AAW69560
                                                                                                                                                                                                         Matches
                                                                                                                                                                                                                  Query Match
Best Local :
                                  Saccharomyces
                                                                              AAW69560;
                                                                                                     AAW69560 standard; Protein; 959
                                                         15-OCT-1998
                                                                                                                                                                                                      Local Similarity hes 8; Conserv
                                                                                                                                                           97 SKIRLLRS 104
|||||||
595 SKIRLLRS 602
                                                                                                                                                              595
yase IV; LIG4; cellular DNA repair; modulation; diagnosis;
Ku-associated DNA repair pathway; cancer; retroviral infection;
                                                                                                                                                                                                         Conservative
                                                         (first entry)
                                    cerevisiae LIG4
                                                                                                                                                                                                                   2.4%;
                                                                                                                                                                                                          0
                                                                                                                                                                                                                   Score 8;
Pred. No.
                                                                                                       ₿
                                                                                                                                                                                                          Mismatches
                                                                                                                                                                                                               DB
44;
                                                                                                                                                                                                          0;
                                                                                                                                                                                                           Indels
                                                                                                                                                                                                           0,
                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                           0
```

22;

Length 628

밁 Q

Saccharomyces

cerevisiae.

Location/Qualifiers /label= signal 16..959 /label= LIG4

Key

Peptide

16-JUL-1998 WO9830902-A1 Protein

DNA ligase IV; XRCC4; Ku-asso

immune

system disorder.

```
RESULT 10
AAB98263
     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    οy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DNA ligase IV (or a fragment, derivative, variant or analogue able to to bind xRCC4; and/or (iii) DPK (or a fragment, derivative, variant or cc analogue able to bind xRCC4), and a test compound under conditions where, cc if the test compound is not an inhibitor of interaction or binding to between the substances, the substances interact or bind; and (b) cc determining interaction or binding between the substances. Compounds which modulate the interaction between xRCC4, DNA ligase IV and DPK can be used to modulate cellular DNA repair activity, e.g. in the treatment cc fproliferative disorders, cancers and tumours, disorders involving retroviruses such as AIDS, human adult T-cell leukaemia/lymphoma. Type I clabetes and multiple sclerosis, and also in radiotherapy and cc chemotherapy. They can also be used for the modulation of cc immune system function. The present sequence represents Saccharomyces cc cerevisiae LIG4 which is used in an example from the present invention.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A method has been developed of assaying for a compound able to modulate the interaction or binding between XRCC4 and any of DNA ligase IV and/or DNA-PKcg/Ku (DPK). The method comprises: (a) bringing into contact: (i) a substance including XRCC4 (or a fragment, derivative, variant or analogue able to bind DNA ligase IV or DPK); (ii) a substance including the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contact of the contac
                                                                                                                                                                                                                                                                     WPI;
                                              20-OCT-2000;
                                                                                               03-MAY-2001
                                                                                                                                              WO200130393-A2
                                                                                                                                                                                               Homo sapiens.
                                                                                                                                                                                                                                                cytostatic;
                                                                                                                                                                                                                                                                                                                                             Anti-A33 antigen
                                                                                                                                                                                                                                                                                                                                                                                               20-AUG-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                AAB98263;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAB98263 standard; Peptide;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Example 2; Fig 6;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DNA-PKcs/Ku
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Modulation of identified as
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Critchlow SE,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (CANC-) CANCER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                20-JUN-1997;
13-JAN-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         13-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1998-399301/34
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           311 GESIKFFS 318
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Similarity
8; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GESIKFFS 193
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             959 AA;
                                                                                                                                                                                                                                                anticancer; colon
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Conservative
                                                 2000WO-US29289
                                                                                                                                                                                                                                                                                                                                                                                            (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        cellular DNA repair activity - using compounds modulating the interaction of XRCC4, DNA ligas \,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Jackson
99US-0425638
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                97GB-0013131.
97GB-0000574.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RES CAMPAIGN TECHNOLOGY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         98WO-GB00095
                                                                                                                                                                                                                                                                                                                                             immunoglobulin VL CDR1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    118pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   100.08; ++
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SP;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score 8;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Mismatches
                                                                                                                                                                                                                                              stomach cancer.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DB 19;
. 65;
                                                                                                                                                                                                                                                                                                                                             SEQ
                                                                                                                                                                                                                                                                                                                                             ID NO:69.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 959
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DNA ligase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ٧
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0;
```

```
RESULT 11
AAB75183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               complementarity determining regions (CDRs), given in AAB98262 to AAB98274. (I) has cytostatic activity. The method can be used for treating colon and stomach cancers. (II), or the nucleic acid encoding it, can be used directly, in unconjugated form, for immunotherapy of cancer, and, when labeled, for detection or diagnosis of diseases associated with A33 expression. AAH22218 to AAH22254 and AAB98230 to AAB98231 represent sequences used in the exemplification of the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    The present invention describes a method for treating cancers that express the A33 antigen. The method comprises administering an anticancer agent (I) conjugated to an immunoglobulin product (II) the binds specifically to A33 and contains one or more of 13 specified
                                                                                                                                                                                                                                                                           Chimeric antibody;
                                                                                                                                                                                                                                                                                                                             08-AUG-2001
                                                                                                                                                                                                                                                                                                                                                      AAB75183;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Claim 1; Page 36; 85pp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Treating cancers, particularly of stomach and colon, that express A33 antigen by administering conjugate of anticancer agent with specific
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (LUDW-) LUDWIG INST CANCER RES
(SLOK ) SLOAN KETTERING INST CI
(SCRI ) SCRIPPS RES INST.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   04-APR-2000; 2000US-0543004
                                               WPI; 2001-328657/34.
                                                                                                                       04-APR-2000; 2000US-0543004
                                                                                                                                     22-OCT-1999;
                                                                                                                                                            20-OCT-2000; 2000WO-US29026
                                                                                                                                                                                       03-MAY-2001
                                                                                                                                                                                                              WO200131065-A1
                                                                                                                                                                                                                                       HOMO
                                                                                                                                                                                                                                                                                                 A33 antigen binding immunoglobulin product CDR peptide SEQ ID NO:69
                                                                                                                                                                                                                                                                                                                                                                              AAB75183 standard; Peptide;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       present invention.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 WPI; 2001-328613/34.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Barbas CF, Rader C,
                                                                                                (SCRI ) SCRIPPS RES INST.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              immunoglobulin product
                                                                                                                                                                                                                                                                                                                                                                                                                                                          277 DFLFNGV 283
                                                                       CF,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Similarity 7; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                             DFLFNGV 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              11
                                                                       Rader C;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative
                                                                                                                                                                                                                                                                anti A33 antigen
                                                                                                                                                                                                                                                                                                                             (first
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ξ,
                                                                                                                                     99US-0425638
                                                                                                                                                                                                                                                                           humanised; humanisation; mammalian antibody; antigen;
                                                                                                                                                                                                                                                                                                                            entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2.1%;
100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ritter G,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             INST CANCER RES
                                                                                                                                                                                                                                                                                                                                                                               11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 7;
Pred. No.
                                                                                                                                                                                                                                                               antibody; immunoglobulin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Welt S,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (11)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     22;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          01d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ξ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length 11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (II) that
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
```

Preparing humanized rabbit antibodies that specifically immunoreact with a particular antigen using display technology for expressing libraries of antibody domains and fine tuning variable domain regions

Example 9; Page

38;

62pp; English

describes a method for

```
RESULT 12
AAY58329
ID AAY58
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
                                                                                                                                                             Baxter
Wagner
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        more complementarity determining region (CDR) from the variable domain sequences that specifically immunoreact with the antigen grafted into framework regions from humans, and selecting the antibodies that react with the antigen. The method is useful for humanising non-human mammalian antibodies, which can be used for the treatment of a variety of diseases. The present sequence represents an A33 antigen binding
                                                                                                                                                                                                                                    30-MAR-1998;
16-DEC-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                GR; progestin receptor; PR; mineralocorticoid receptor; MR; androgen receptor; AR; Grip-1; Tif2; NcoA-2; RAC3; AIB1; TRAM-1; P/CIP; SRC1; breast cancer; prostate cancer; cardiac arrhythmia; infertility;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Nuclear receptor; p160 coactivator; NR-box; coactivator binding domain; NR; AF2 transactivation domain; mutant; thyroid hormone receptor; TR; retinoid receptor; RAR; RXR; peroxisome receptor; PPAR; mutein; vitamin D receptor; VDR; coestrogen receptor; ER; glucocorticoid receptor.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          The present invention describes a method for preparing a humanised rabbit antibody that specifically immunoreacts with a particular antigen. The method comprises expressing a library of antibodies comprising one or
                    The invention relates
                                               Disclosure; Page -;
                                                                                      Identifying modulators of nuclear receptor coactivator binding useful for generating new compounds which distinguish nuclear receptor
                                                                                                                                  WPI; 2000-072429/06
                                                                                                                                                                                                                                                                             30-MAR-1999;
                                                                                                                                                                                                                                                                                                         25-NOV-1999
                                                                                                                                                                                                                                                                                                                                     WO9960014-A2
                                                                                                                                                                                                                                                                                                                                                               Synthetic
                                                                                                                                                                                                                                                                                                                                                                              Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                      osteoporosis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Human Grip-1 I15A mutant NR-box 2 peptide.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             27-MAR-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AAY58329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AAY58329 standard; peptide;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence
                                                                                                                                                                                                        (REGC ) UNIV CALIFORNIA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                present invention.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          immunoglobulin product CDR peptide which is given in an example from the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                277 DFLFNGV 283
                                                                                                                                                                             'n,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       4 DFLFNGV 10
                                                                                                                                                                RL,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Similarity 7; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    11 AA;
                                                                                                                                                                West
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative
                                                                                                                                                                            Darimont B,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                    hyperthyroidism; hypercholesterolaemia; obesity;
                                                                                                                                                                                                                                  98US-0079956
98US-0113146
                                                                                                                                                                                                                                                                             99WO-US06899
                                                                                                                                                                BĽ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2.1%; 5cc
100.0%; Pr
                                               281pp; English
a method of identification of a binding to a nuclear receptor.
                                                                                                                                                                Yamamoto
                 method of identification of a
                                                                                                                                                                            Feng W,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     34
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 7;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Mismatches
                                                                                                                                                                             Fletterick R,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DB
11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       22;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 11
                                                                                                                                                                             Kushner
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                    compound
                                                                                                                                                                             Ы
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0
                    that
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
```

```
creceptors (ERS), glucocorticoid receptors (GRS), receptors (CRS), mineralocorticoid receptors (GRS), maddition receptors (CRS), mineralocorticoid receptors (MRS), androgen receptors (ARS) and cosanoid receptors (IRS). These receptors, in addition to binding their cognate ligand, also bind coactivator proteins that are involved in receptor function, for example NRS can stimulate transcription in cresponse to hormone binding by recruiting coactivator proteins to the promoters of responsive genes. Coactivators of the p160 family mediate activity of a transcriptional activation domain, AF2, that is part of the nuclear receptor's ligand binding domain. The method may be used to identify an agonist or antagonist of coactivator binding to a nuclear receptor. The methods can also be used to identify residues which comprise a coactivator binding site of a nuclear receptor of interest. The methods are applicable to generating new compounds that distinguish nuclear receptor isoforms. This can facilitate generation of either cancer, prostate cancer, cardiac arrhythmia, infertility, osteoporosis, hyperthyroidism, hypercholesterolaemia and obesity. Sequences AAY58282-AAY58302 represent the regions (NR-boxes I-3) of p160 coactivator binding coactivator binding sites (AAY58307-Y58328). The NR coactivator binding sites comprise two coactivator of the NR; helices 3-6 (H3-H6), and helix 12 (H12). The
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             comprises modelling test compounds that fit spatially into a nuclear receptor (NR) coactivator binding site of interest using an atomic structural model of a nuclear receptor coactivator binding site. The test compounds are screened by their ability to bind to an NR coactivator binding site, leading to the identification of a compound which modulates coactivator binding. Nuclear receptors are a superfamily
                                                      AAY58329-Y58240 represent mutant versions of the human Grip-1 NR-box 2 sequence (AAY5823), and sequences AAY58363 represent mutant versions of NR coactivator binding sites, used in exemplifications of invention. Note: This sequence is not shown in the specification, but i derived from the human Grip-1 NR-box 2 sequence given in figure 6.
                                                                                                                                                                                                          coactivator NR-boxes all share a consensus sequence LXXLL (AAY58278), with the NR-box 2 motifs sharing the consensus motif ILXXLL (AAY58279). Sequences AAY5280-V58281 represent the hydrophobic interaction motifs are possible of the invention. Sequences and VP16 used in an exemplification of the invention. Sequences
Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      receptors (PPARs and XPARs), vitamin D receptors (VDRs), oestrogen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         hormone receptors (TRs),
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   of hormone/ ligand activated transcription factors, and includes thyroid
   34
   AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         retinoid receptors (RARs and RXRs),
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         peroxisome
                                                                                                                                                                                                                                                    of
f
```

0;

```
RESULT 13
ABB34839
멍
                                                                                                                                                                                       QY
                                                                                                                                                                                                        Matches
                                                                                                                                                                                                             Query Match
Best Local
04-FEB-2000; 2000US-0180312
               30-JAN-2001; 2001WO-US00669
                              09-AUG-2001
                                             WO200157277-A2
                                                           Homo sapiens
                                                                          Human;
                                                                                         Peptide #2345 encoded by human foetal liver single exon probe
                                                                                                        04-FEB-2002
                                                                                                                       ABB34839;
                                                                                                                                     ABB34839 standard; Peptide;
                                                                                                                                                                                   205 KEKHKAL
                                                                                                                                                                           10
                                                                                                                                                                                                      l Similarity
7; Conserv
                                                                          foetal liver;
                                                                                                                                                                                                       Conservative
                                                                                                        (first entry)
                                                                                                                                                                                        211
                                                                                                                                                                                                              2.1%;
                                                                          gene expression;
                                                                                                                                      46
                                                                                                                                                                                                       0;
                                                                                                                                                                                                              Score 7;
Pred. No.
                                                                                                                                                                                                        Mismatches
                                                                           single exon
                                                                                                                                                                                                           DB
31;
                                                                                                                                                                                                                      21;
                                                                                                                                                                                                       0;
                                                                                                                                                                                                                      Length 34;
                                                                           nucleic acid
                                                                                                                                                                                                        Indels
                                                                                                                                                                                                       0;
                                                                           probe
                                                                                                                                                                                                       Gaps
```

0;

modulates coactivator

The method

```
RESULT 14
AAM55647
ID AAM55
XX AAM55
AC AAM55
XX D5-N
DT 05-N
DT 05-N
DT 05-N
XX Huma
XX Huma
XX Hom
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
XX M 20-
X
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Matches
                                                                                                                                                                  04-FEB-2000;
26-MAY-2000;
30-JUN-2000;
03-AUG-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      26-MAY-2000;
30-JUN-2000;
03-AUG-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Penn
                                                                                                                                                                                                                                                                        30-JAN-2001;
                                                                                                                                                                                                                                                                                                                 09-AUG-2001
                                                                                                                                                                                                                                                                                                                                                        W0200157275-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                        epilepsy;
                                                                                                                                                                                                                                                                                                                                                                                                                                                       Human; brain expressed exon; gene expression analysis; microarray; Alzheimer's disease; multiple sclerosis; so
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Human brain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   05-NOV-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAM55647;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAM55647
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          nucleic acid probe of the invention.

Note: The sequence data for this patent did not form printed specification, but was obtained in electronic from WIPO at ftp.wipo.int/pub/published_pct_sequences.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        liver. The single exon nucleic acid probes may be used for predicting, measuring and displaying gene expression in samples derived from human fetal liver. The present sequence is a peptide encoded by a single exception.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           The invention relates to a single exon nucleic acid probe for measuring human gene expression in a sample derived from human
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Claim
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   analyzing
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (MOLE-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             04-OCT-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 21-SEP-2000;
27-SEP-2000;
                                                              (MOLE-)
                                                                                                                                                                                                                                                                                                                                                                                               sapiens
                     SG,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2001-483447/52.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 genome-derived single exon nucleic acid probes
zing gene expression in human fetal liver -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         32
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Similarity 7; Conserv
                                                              MOLECULAR DYNAMICS INC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MOLECULAR DYNAMICS INC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                VRANCEA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         VRANCEA
                                                                                                                                                                                                                                                                                                                                                                                                                                          cancer
                     Hanzel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Hanzel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          46
                                                                                                   2000US-0180312.
2000US-0207456.
2000US-0608408.
2000US-0632366.
2000US-0234687.
2000US-0234687.
2000US-023468359.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    expressed single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2.1%;
ilarity 100.0%;
Conservative (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2000US-0207456.

2000US-0608408.

2000US-0632366.

2000US-0234687.

2000US-02346359.

2000US-0236359.
                                                                                                                                                                                                                                                                        2001WO-US00667
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (first
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              H
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         38
                     X,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ŗ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      27474; 639pp + sequence listing;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               entry)
                     Chen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Chen
                     Σ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Σ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    46
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score 7;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      exon
                     Rank DR;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Rank
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    probe encoded protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DB .
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              22;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 46
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  part of the c format directly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             from human foetal
                                                                                                                                                                                                                                                                                                                                                                                                                                                       schizophrenia;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         useful
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQ ID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          of.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 exon
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0
```

```
RESULT 15
AAM68027
ID AAM68
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            probes which are derived from genomic sequences expressed in the human brain. They can be used to measure gene expression in brain cell samples which may enable the diagnosis and improved treatment of nervous system diseases such as Alzheimer's disease, multiple sclerosis, schizophrenia, epilepsy and cancers. The present sequence is a protein encoded by one cepilepsy and cancers.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Single
brains
      The present invention provides a number of single exon nuc probes which are derived from genomic sequences expressed bone marrow. They can be used to measure gene expression i samples, which may enable the improved diagnosis and treat such as lymphoma, leukaemia and myeloma. The present seque protein encoded by one of the probes of the invention.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            WPI;
                                                                                 Example
                                                                                                      analyzing
                                                                                                                                                          Penn
                                                                                                                                                                                                                                 30-JUN-2000;
03-AUG-2000;
                                                                                                                                                                                                                                                                04-FEB-2000;
                                                                                                                                                                                                                                                                                      30-JAN-2001;
                                                                                                                                                                                                                                                                                                           09-AUG-2001
                                                                                                                                                                                                                                                                                                                                                       Homo
                                                                                                                                                                                                                                                                                                                                                                           microarray;
                                                                                                                                                                                                                                                                                                                                                                                                                              06-NOV-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                   AAM68027;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AAM68027
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   The present invention
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Example
                                                                                                                                                                                                                                                       26-MAY-2000;
                                                                                                                                                                                                                                                                                                                                WO200157276-A2
                                                                                                                                                                                                                                                                                                                                                                                     Human; bone
                                                                                                                                                                                                                                                                                                                                                                                                         Human bone marrow expressed
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   the probes of the
                                                                                                                                                                              (MOLE-)
                                                                                                                                                          SG,
                                                                                                                                                                                                                                                                                                                                                      sapiens.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2001-483446/52
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 238
                                                                                                               genome-derived single exon nucleic acid probes useful for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             32
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               exon nucleic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    7; Conserv
                                                                                  4.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        4;
                                                                                                                                                                              MOLECULAR DYNAMICS INC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        VRANCEA 244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            VRANCEA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        standard;
                                                                                                      gene
                                                                                                                                                          Hanzel DK,
                                                                                 SEQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQ
                                                                                                                                                                                                                                                                                                                                                                           cancer;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                46 AA;
                                                                                                                                                                                                  2000US-0608408.
2000US-0632366.
2000US-0234687.
2000US-0236359.
2000US-0024263.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                      2000US-0180312.
2000US-0207456.
                                                                                                                                                                                                                                                                                      2001WO-US00668
                                                                                                                                                                                                                                                                                                                                                                                                                              (first
                                                                                  ij
                                                                                                      expression
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ID NO:
                                                                                 NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   invention.
                                                                                                                                                                                                                                                                                                                                                                                    expressed exon;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       acid
                                                                                                                                                                                                                                                                                                                                                                          leukaemia;
                                                                                                                                                                                                                                                                                                                                                                                                                             entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2.1%;
                                                                                 28333;
                                                                                                                                                         Chen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   provides a number of single exon nucleic acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       27752; 650pp +
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       probes for analyzing gene expression
                                                                                                      in
                                                                                                                                                         Σ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       46
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0,
                                                                                                                                                                                                                                                                                                                                                                                                         probe encoded protein SEQ ID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score 7;
Pred. No.
                                                                                658pp + Sequence Listing; English
                                                                                                      human
                to measure gene expression in bone marrow improved diagnosis and treatment of cance and myeloma. The present sequence is a
                                                                                                                                                                                                                                                                                                                                                                           lymphoma; myeloma
                                                                                                                                                          Rank
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Mismatches
                                                                                                      bone
                                                                                                                                                                                                                                                                                                                                                                                    gene expression
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DB 2
                                                                                                      marrow
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           22;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Listing;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length
                                                           exon nucleic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                     analysis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        English
                                                                                                                                                                                                                                                                                                                                                                                                         NO:
                                                  in the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0;
                                                                                                                                                                                                                                                                                                                                                                                     probe;
                                                                                                                                                                                                                                                                                                                                                                                                         28333.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ij
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        human
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             samples,
                              cancers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              of.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0;
```

Ouery Match
Ouery Match
Similarity 100.0%; Fred. No. 40;
Matches 7; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 238 VRANCEA 244
Db 32 VRANCEA 38

Search completed: June 24, 2003, 18:54:25
Job time: 32 secs

```
Result
No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Minimum DB seq
Maximum DB seq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               OM nucleic - nucleic search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Post-processing: Minimum Match 0%
                   ဂ ဂ ဂ
                                                                                                               000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                             2160
42160
380.2
380.2
380.2
37
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     length: 0
length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US-09-870-406A-32
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  June 24, 2003, 13:42:49; Search time 220 Seconds (without alignments)
14407.467 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                             Query
Match Length DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          IDENTITY_NUC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1042519 segs, 733713590 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gapop 10.0 , Gapext 1.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Published_Applications_NA: *
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          gaattccccacgtcaacgtg.....tcgtctctacctaatcaaca 2160
                                                                                                           1.8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GenCore version 5.1.6 Copyright (c) 1993 - 2003 Compugen Ltd
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /cgn2_6/ptodata/2/pubpna/US08_NEW_PUB.seq:*
/cgn2_6/ptodata/2/pubpna/US08_PUBCOMB.seq:*
/cgn2_6/ptodata/2/pubpna/US09_NEW_PUB.seq:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /cgn2_6/ptodata/2/pubpna/US07_PUBCOMB.seq:*
/cgn2_6/ptodata/2/pubpna/PCT_NEW_PUB.seq:*
/cgn2_6/ptodata/2/pubpna/US06_NEW_PUB.seq:*
                           9 2251
1 640681
228
17142
6025
404
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /cgn2_6/ptodata/2/pubpna/US06_PUBCOMB.seq:*
/cgn2_6/ptodata/2/pubpna/US07_NEW_PUB.seq:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /cgn2_6/ptodata/2/pubpna/US09_PUBCOMB.seq:*
/cgn2_6/ptodata/2/pubpna/US10_NEW_PUB.seq:*
/cgn2_6/ptodata/2/pubpna/US10_NEW_PUB.seq:*
/cgn2_6/ptodata/2/pubpna/US60_NEW_PUB.seq:*
/cgn2_6/ptodata/2/pubpna/US60_PUBCOMB.seq:*
                                                                                                                                                                  465237
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /ptodata/2/pubpna/PCTUS_PUBCOMB.seq:*
                                                                                                             10
10
10
10
10
       US-10-239-676-160

US-09-960-352-3400

US-09-960-352-5785

US-09-960-352-578-1

US-09-933-2678-1

US-09-796-2568-1

US-09-783-590-7986

US-10-239-676-206

US-10-239-676-206

US-09-795-686-1414

US-09-795-686-1414

US-09-795-686-1414
                                                                                                                                                                                                                                                                US-09-742-096-
                                                                                                                                                                                                                                                                                                                                                                                                                                       SUMMARIES
       Sequence 32, Appl
Sequence 6, Appli
Sequence 6, Appli
Sequence 1, Appli
Sequence 100, App
Sequence 1035, Ap
Sequence 1035, Ap
Sequence 5785, Ap
Sequence 1, Appli
Sequence 1, Appli
Sequence 1, Appli
Sequence 1, Appli
Sequence 1, Appli
Sequence 105, App
Sequence 1414, Appli
Sequence 1414, Appli
Sequence 1414, Appli
Sequence 1414, Appli
Sequence 1414, Appli
Sequence 1414, Appli
Sequence 1414, Appli
Sequence 1414, Appli
Sequence 1414, Appli
Sequence 1414, Appli
Sequence 1414, Appli
Sequence 1414, Appli
Sequence 1414, Appli
Sequence 1414, Appli
Sequence 1414, Appli
                                                                                                                                                                                                                                                                                                                                                                             Description
```

4.5	44	43	42	41	40	39	38	37	36	35	34	ω ω	32	31	30	29	28	27	26	25	24	23	22	21	20
35.8	بر 50	36	36	36	36	36.4	36.4	36.4	36.4	36.4	36.4	36.6	36.6	36.8	37	37	37	37.2	37.2	37.4	37.6	37.6	37.6	37.6	37.6
1.7	1 7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
399	065	730	424	424	397	13049	13049	13049	13049	6478	2415	40267	14649	12405	1691139	400	286	.2000	479	753	1503841	1503841	1503841	11036	10286
10	3	ဖ	ø	9	10	10	10	9	9	9	9	φ	φ	9	9	.7	ļ	9	10	10	1	ï	9	ø	9
US-09-960-352-10222	115-09-960-352-3640	US-10-198-846-2090	US-10-040-862-4727	US-09-796-692-4727	US-09-867-701-4679	US-09-797-518A-1	US-09-231-235-1	US-09-872-696A-1	US-09-996-073-1	US-10-239-676-123	US-09-978-385-3	US-09-978-244A-25	US-10-239-676-122	US-10-239-676-35	US-10-067-514-1	US-08-781-986A-1547	US-09-960-352-13342	US-09-938-842A-4483	US-09-960-352-12872	US-09-754-634A-3	) US-09-795-686-1	) US-09-795-668-1	US-09-946-807-1	US-10-239-676-117	US-10-239-676-13
Sequence 10222, A	Seguence 3640. An	Sequence 2090, Ap	Sequence 4727, Ap	Sequence 4727, Ap	Sequence 4679, Ap	Sequence 1, Appli	Sequence 1, Appli	Sequence 1, Appli	Sequence 1, Appli	Sequence 123, App	Sequence 3, Appli		Sequence 122, App	Sequence 35, Appl	Sequence 1, Appli	Sequence 1547, Ap	Sequence 13342, A	Sequence 4483, Ap	Sequence 12872, A	Sequence 3, Appli	Sequence 1, Appli	Sequence 1, Appli	Sequence 1, Appli	Sequence 117, App	Sequence 13, Appl

a

0 0

0000

## ALIGNMENTS

RESULT 1 US-10-159-901-32

GENERAL INFORMATION:

APPLICANT: LAGARIAS, JOHN APPLICANT: KOICHI, TAKAYI APPLICANT: FRANKENBERG, N

Sequence 32, Application US/10159901 Publication No. US20030073235A1

```
SEQ ID NO 32
LENGTH: 2160
                                                                                                                                                                                                                                                                                                                                                                                                                  CURRENT FILING DATE: 2002-05-
PRIOR APPLICATION NUMBER: 60/2
PRIOR FILING DATE: 2001-05-29
NUMBER OF SEQ ID NOS: 57
SOFTWARE: PatentIn version 3.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CURRENT APPLICATION NUMBER: US/10/159,901
CURRENT FILING DATE: 2002-05-29
PRIOR APPLICATION NUMBER: 60/294,463
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TITLE OF INVENTION: LIGHT CONTROLLED GENE EXPRESSION UTILIZING HETEROLOGOUS PHYTOC FILE REFERENCE: 407T-907731US
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICANT:
                                                                                                                                                                              FEATURE:
NAME/KEY: CDS
LOCATION: (852)..(947)
                                                                                   NAME/KEY:
NAME/KEY: CDS
                                                                                                                                   NAME/KEY: CDS
LOCATION: (1034)..(1126)
                                                                                                                                                                                                                                       NAME/KEY: CDS
LOCATION: (653)..(769)
                                                                                                                                                                                                                                                                                FEATURE
                                                                                                                                                                                                                                                                                             NAME/KEY: CDS
LOCATION: (248)..(469)
                                                                                                                                                                                                                                                                                                                                   FEATURE:
                                                                                                                                                                                                                                                                                                                                                ORGANISM: Arabidopsis thaliana
                                                                                                                                                                                                                                                                                                                                                                    TYPE: DNA
                                               NAME/KEY:
                                                                                                                      FEATURE
                                                                                                                                                                     FEATURE
                                                                     FEATURE
                                OCATION:
                                                                                                                                                                                                                                                                                                                                                                                                                     PatentIn version 3.0
                             CDS
(1419)..(1523)
                                                                                CDS
(1213)..(1344)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          KOICHI, TAKAYUKI
FRANKENBERG, NICOLE
GAMBETTA, GREGORY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MONTGOMERY, BERONDA
```

```
밁
           δÃ
                   P 45
                                         Ъ
                                                  Ş
                                                            B
                                                                      δ
                                                                                 P 64 P
                                                                                                             04
07
07
                                                                                                                                                                        04
9
04
                                                                                                                                                                                                     45 A
                                                                                                                                                                                                                                  Oy
Qy
                                                                                                                                                                                                                                                                 Дb
                                                                                                                                                                                                                                                                         QΥ
                                                                                                                                                                                                                                                                                   Дb
                                                                                                                                                                                                                                                                                             Qy
                                                                                                                                                                                                                                                                                                                                                ; LOCATION: (1612)..(1662); FEATURE: ; NAME/KEY: CDS; LOCATION: (1743)..(1913) US-10-159-901-32
                                                                                                                                                                                                                                                                                                         B 8
                                                                                                                                                                                                                                                                                                                            Query Match 100.0%;

Best Local Similarity 100.0%;

Matches 2160; Conservative (
   901
                                                                                                                                                    481
                                           781
                                                               721
                                                                        721
                                                                                                                                            481
                                                                                                                                   541
                                                                                                                                                                         421
                                                                                                                                                                421
                                                                                                                                                                                    361
                                                                                                                                                                                                        301
                                                                                                                                                                                              361
                                                                                                                                                                                                                  301
                                                                                                                                                                                                                           241
                                                                                                                                                                                                                                   241
                                                                                                                                                                                                                                               181
                                                                                                                                                                                                                                                        181
                                                                                                                                                                                                                                                                  121
                                                                                                                                                                                                                                                                             121
                                                                                                                                                                                                                                                                                      61
                                                                                                                                                                                                                                                                                               61
TCTTCGCTTAGGTCTTTGACTTTGCGGGTTTTCATGGAGCCTGAGTATGATACTCCCATAT
                                       TACATTICGTTAGTGTAGTGGGAGGATTATATTTCTCATTGTTTCTTGCTGTGAATTTTG
                                                                                                                                                             TTTAGAAGAAACCAGGAAAAGGATCGTTGTTGAACCTTCACATCTCCAGGTATATGCAAT
                                                                                                                                                                                AAAGAAAAGATTCTTACTTAGAGTCTCTGCTGTGTGTGGTATAAGGAATTCGCAGAGTCTGC
                                                                                                                                                                                                    AACTGTGAAAATTTTATCTCTTTTATAGATAAAGAATCTTGCTTTTTCAGTTTTCAGTA
                                                                                                                                                                                                                                                                                   ACCATGACTCGGACGGATGTTGAAATTCATTGTCGTTGCCAATTGCGTTTGTCTCACTGA
                                                                                                                                                                                                                                                                                                      0,
                                                                                                                                                                                                                                                                                                                                 Score 2160;
Pred. No. 0;
                                                                                                                                                                                                                                                                                                                            Mismatches
                                                                                                                                                                                                                                                                                                                                     DB
                                                                                                                                                                                                                                                                                                                           0;
                                                                                                                                                                                                                                                                                                                                    9;
                                                                                                                                                                                                                                                                                                                           Indels
                                                                                                                                                                                                                                                                                                                                    Length
                                                                                                                                                                                                                                                                                                                           0;
                                                                                                                                                                                                                                                                                                                          Gaps
                                        840
                                                  840
                                                                                                    660
                                                                               720
                                                                                          720
                                                                                                             660
                                                                                                                       600
                                                                                                                                 600
                                                                                                                                          540
                                                                                                                                                    540
                                                                                                                                                                       480
                                                                                                                                                                                 420
                                                                                                                                                                                           420
                                                                                                                                                                                                     360
                                                                                                                                                                                                               360
                                                                                                                                                                                                                                 300
                                                                                                                                                                                                                                                                                             120
                                                                                                                                                                                                                                                                                                       60
                                                                                                                                                                                                                                                                                                                60
    멍
          QΥ
                        B
                               δõ
                                         망
                                                   Q
                                                             망
                                                                       QΥ
                                                                                   DЬ
                                                                                           Qy
                                                                                                     В
                                                                                                              γQ
                                                                                                                                  Qy
                                                                                                                                              Ъ
                                                                                                                           В
                                                                                                                                                       δÃ
                                                                                                                                                                밁
                                                                                                                                                                         ΔÃ
                                                                                                                                                                                     В
                                                                                                                                                                                            Qγ
                                                                                                                                                                                                        В
                                                                                                                                                                                                                 Ωy
                                                                                                                                                                                                                           ğ
                                                                                                                                                                                                                                    Ş
                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                       Š
                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                           δÃ
                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                       망
                                                                                                                                                                                                                                                                                                          В
                                                                                                                                                                                                                                                                                                                  Q
                                                                                                                                                                                                                                                                                                                              В
                                                                                                                                                                                                                                                                                                                                    γQ
                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                         δÃ
    1981
                                                                                                       1681
                                                                                             1741
                                                                                                                 1681
                                                                                                                           1621
                                                                                                                                    1621
                                                                                                                                              1561
                                                                                                                                                                 1501
                                                                                                                                                                                     1441
                                                                                                                                                                                                        1381
                                                                                                                                                       1561
                                                                                                                                                                                                                  1381
                                                                                                                                                                                                                            1321
                                                                                                                                                                                                                                      1321
                                                                                                                                                                                                                                                1261
                                                                                                                                                                                                                                                         1261
                                                                                                                                                                                                                                                                   1201
                                                                                                                                                                                                                                                                             1201
                                                                                                                                                                                                                                                                                       1141
                                                                                                                                                                                                                                                                                                           1081
                                                                                                                                                                                                                                                                                                                              1021
                                                                                                                                                                                                                                                                                                                    1081
 AGTAGGAATAAGAAAGAGCAGCATGAGGAGTCTCTCAGGTCTATCTGCATTTCAAGATGA
                    TTGGGAAGTCATATGAAACTCGTCCATGGGATTTAACAGGACAATTTATCGGCTAACAAT
                                                            TTGATTACTTTCCAGAGTACCAAACAGAAGATGGAACTGTAAGCGATAAACGAAGTATCA
                                                                                ACAGACACTGTATCTGTATTGTTACAATGGATATTGATTTGGTGTTTTGCAGGATCCTGGA
                                                                                                                                                              ACCTGACATGGCGAGCACAAAAGGTGATTTCATTTCCTTTTGTGTAATTTGCATGTTTGA
                                                                                                                                                                                 AAGTGAGGAGGAGATGGAACCATCTCATGTGAGAGCCAATTGTGAAGCACAACACAAGT 1500
                                                                                                                                                                                                     TCGCCTTTGGTGATGTGGACTAGGTTTTCGTCTAGCAAAGAAAAACATAAGGCTTTGTTC
                                                                                                                                                                                                                                                                ATTTATTTGCAGACTTTCCCATGGGGAGGGAAATTGACTGGTGAATCCATAAAGTTTTTC
                                                                                                                                                                                                                                                                                                       TCGCCTTTGGTGATGTGGACTAGGTTTTCGTCTAGCAAAGAAAAACATAAGGCTTTGTTC
                                                                                                                                                                                                                                                                                   AGTTATGCTGGAGTTATCAGGTCTGTATTGTCCAAACTGATGTTCAATATTTTACTGTAT
                                                                                                                                                                                                                                                                                                                           GTTCTTCTTTAGGGACCTTAATCCTTTGCATCAGTTGACCTGACCAGACGGATTACCAAGA
  2040
           2040
                                                   1920
                                                                                           1800
                                                             1860
                                                                                 1800
                                                                                                     1740
                                                                                                                        1680
                                                                                                                                                                                                                                   1380
                                                                                                                                                                                                                          1380
                                                                                                                                                                                                                                             1320
                                                                                                                                                                                                                                                       1320
                                                                                                                                                                                                                                                                          1260
                                                                                                                                                                                                                                                                                                       1140
```

Query Match Best Local Similarity 100.0%; Pred. No. 0; Matches 2160; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  Qy 1 GAATTCCCCACGTCAACGTGACTGTGCATTCCACGTGGGGGTGTGGGCCCTATAGTTGG 60	: LOCATION: (1419)(1523) : FEATURE: : NAME_KEY: CDS : LOCATION: (1612)(1662) : FEATURE: : NAME_KEY: CDS : LOCATION: (1743)(1913) US-09-870-406A-32	FEATURE: NAME/KEY: CDS LOCATION: (1034). FEATURE: NAME/KEY: CDS LOCATION: (1213). FEATURE: NAME/KEY: CDS	; NAME/KEY: CDS ; LOCATION: (248)(469) ; FEATURE: ; NAME/KEY: CDS ; LOCATION: (653)(769) ; FEATURE: ; NAME/KEY: CDS ; LOCATION: (852)(947)	PRIOR FILING DATE: 2000-06-08 NUMBER OF SEQ ID NOS: 57 SOFTWARE: PatentIn version 3.0 SEQ ID NO 32 LENGTH: 2160 TYPE: DNA ORGANISM: Arabidopsis thaliana FEATURE:	APPLICANT: TITLE OF ITE FILE REFEREN CURRENT APPL CURRENT FILI PRIOR APPLIC PRIOR APPLIC	0 11 00 11	Qy 2041 TTGTTTGAGTTACCATGGATTGTAGTTTTACAAGTGTAGCTCTGAGCCCTTCATCAAAAT 2100
	0 Db Oy	Q	QY QY	Qy Qy	оу Оу оф	Oy Oy	р оу
	901 TCTGTGCTAACTTTTCACATCTACCAACGTTAACATAGTTGTATGTA	781 GCAGTACAAACTGATTGCTTTAGTCCCATTTCCTTTCAATTGATTG	661 TAGTAGCATGACAGGACTAGATGGTAAGACCGAACTTCAAATGCTTGCT	541 GGTAAATTGAGTTGGAGTTGTCATTAGGAACCAAACAATAACTTTACTGTTATAGACTGC 600	421 TTTAGAAGAACCAGGAAAAGGATCGTTCTTGAACCTTCACATCTCCAGGTATATGCAAT 480	301 AAACCCACCTGTTCTAATCTCTGCAAGCCCTAATAAGATCAATTTCACGTTGAGAAGAG 360	121 AACTGTGAAAATTTTATCTCTTTTATAGATAAAGAATCTTGCTTTTTCAGTTTTCAGTA 180  181 TGAAGAAGAATTGAAGAGAGTGTCCGAGGAAGAGACCTTTGGTTTCAGTTTTGTGAGTCT 240

```
RESULT 3
US-10-038-241-6
                                                                                                   밁
                                                                                                               δÃ
                                                                                                                               밁
                                                                                                                                          δ
                                                                                                                                                           В
                                                                                                                                                                         ρ
                                                                                                                                                                                        멍
                                                                                                                                                                                                    δÃ.
                                                                                                                                                                                                                     Ъ
                                                                                                                                                                                                                               δã
                                                                                                                                                                                                                                                 В
                                                                                                                                                                                                                                                              γQ
                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                        δÃ
                                                                                                                                                                                                                                                                                                     . 문
                                                                                                                                                                                                                                                                                                                   ν
                                                                                                                                                                                                                                                                                                                                     멍
                                                                                                                                                                                                                                                                                                                                                   Q
Sequence 6, Application US/10038241
Publication No. US20030032167A1
GENERAL INFORMATION:
APPLICANT: Conklin, Darrell C.
APPLICANT: Gao, Zeren
APPLICANT: Lofton-Day, Catherine E.
APPLICANT: Whitmore, Theodore E.
TITLE OF INVENTION: SECRETED ALPHA-HELICAL PROTEIN ZLMDA24
FILE REFERENCE: 00-94
                                                                                                                                                                                                                                                                                                                                                                  В
                                                                                                                                                                                                                                                                                                                                                                              δõ
                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                          õ
                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                         Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ωy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ş
                                                                                                  2101
                                                                                                                                                                                         1921
                                                                                                                                                                                                                                   1861
                                                                                                                                                                                                                                                  1801
                                                                                                                                                                                                                                                                1801
                                                                                                                                                                                                                                                                             1741
                                                                                                                                                                                                                                                                                                         1681
                                                                                                                                                                                                                                                                                                                        1681
                                                                                                                                                                                                                                                                                                                                                   1621
                                                                                                                                                                                                                                                                                                                                                                  1561
                                                                                                                                                                                                                                                                                                                                                                                 1561
                                                                                                                                                                                                                                                                                                                                                                                               1501
                                                                                                                                                                                                                                                                                                                                                                                                             1501
                                                                                                                                                                                                                                                                                                                                                                                                                            1441
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1321
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1261
                                                                                             GAGAATCCTCGAGTATGATATGATTTTAATGAAAATGTATTCGTCTTCTACCTAATCAACA
                                                                                                                         AGTAGGAATAAGAAAGAGCAGCATGAGGAGTCTCTCAGGTCTATCTGCATTTCAAGATGA
                                                                                                                                                                                  TTGGGAAGTCATATGAAACTCGTCCATGGGATTTAACAGGACAATTTATCGGCTAACAAT
                                                                                                                                                                                                                                            TTGGGAAGTCATATGAAACTCGTCCATGGGATTTAACAGGACAATTTATCGGCTAACAAT
                                                                                                                                                                                                                                                                                                             CATTAGTGTCCCCATTATTAATTAGCTTGTGAAGATGTTGAAAATGATTTGAACAAAATC
                                                                                                                                                                                                                                                                                                                                                             ACAGACACTGTATCTGTATTGTTACAATGGATATTGATTTGGTGTTTGCAGGATCCTGGA 1620
                                                                                                                                                                                                                                                                                                     CATTAGTGTCCCCATTATTAATTAGCTTGTGAAAATGTTTGAAAATGAATTGAACAAAATC
                                                                                                                                                                                                                                                                                                                                                                                                                       AAGTGAGGGAGGAGGAACCATCTCATGTGAGAGCCAATTGTGAAGCACAACACAAGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                   ACCTGACATGGCGAGCACAAAAGGTGATTTCATTTCCTTTTGTGTAATTTTGCATGTTTGA
                                                                                                                                                                                                                                                                                                                                                                                                  ACCTGACATGGCGAGCACAAAAGGTGATTTCATTTCCTTTTGTGTAATTTGCATGTTTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                2160
                                                                                             2160
                                                                                                                          2100
                                                                                                                                        2100
                                                                                                                                                      2040
                                                                                                                                                                     2040
                                                                                                                                                                                    1980
                                                                                                                                                                                                 1980
                                                                                                                                                                                                                1920
                                                                                                                                                                                                                              1920
                                                                                                                                                                                                                                                                                                     1740
                                                                                                                                                                                                                                                                                                                   1740
                                                                                                                                                                                                                                                                                                                                  1680
                                                                                                                                                                                                                                                                                                                                               1680
                                                                                                                                                                                                                                                                                                                                                                                           1560
                                                                                                                                                                                                                                                                                                                                                                                                         1560
                                                                                                                                                                                                                                                                                                                                                                                                                       1500
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1380
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1380
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1320
                                                                                                                                                                           밁
                                                                                                                                                                                        Qy
                                                                                                                                                                                                       멍
                                                                                                                                                                                                                    Qy
                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                               γ
                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                             Q
                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                         ğ
                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                     QΥ
                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                  Ş
```

```
; OTHER INFORMATION: Degenerate polynucleotide sequence; OTHER INFORMATION: zlmda24 shown in SEQ ID NO:4; NAME/KEY: misc_feature; LOCATION: (1)...(759); OTHER INFORMATION: n = A,T,C or G US-10-038-241-6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CURRENT APPLICATION NUMBER: US/10/038,241
CURRENT FILING DATE: 2001-10-19
PRIOR APPLICATION NUMBER: US 60/242,023
PRIOR FILING DATE: 2000-10-20
NUMBER OF SEQ ID NOS: 25
SOFTWARE: FastSEQ for Windows Version 3.0
SEQ ID NO 6
LENGTH: 759
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ORGANISM: Artificial Sequence FEATURE:
                                                                            355
                                                                                                                   803
                                                                                                                                                                                              548
                                     668 ATGACAGGACT 678
                                                                                                                                                        295
                                                                                                                                                                                                                                   235
                                                                                                                                                                                                                                                                        488
                                                                                                                                                                                                                                                                                                             175
                                                                                                                                                                                                                                                                                                                                                     428
                                                                                                                                                                                                                                                                                                                                                                                        115
                                                                                                                                                                                                                                                                                                                                                                                                                368 AGATTCTTACTTAGAGTCTCTGCTGTGTCGTATAAGGAATTCGCAGAGTCTGCTTTAGAA 427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    55
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               l Similarity
98; Conserv
    CCNACNMGNYT
                                                                    AARWSNGARACNGARTTYATGYTNCARAAYATGAARATHGTNGTNGCNWSNCAYAAYATH
                                                                                        AGTAAAAGTTCAGATTTTGTTTTTCTAATCACGAAACTGTTTCAGGAAAAGTATAGTAGC
                                                                                                                                            ATHYTNGARWSNWSNAAYGGNACNYTNTTYMGNATHYTNYTNGAYTAYGTNGCNCAYGAR
                                                                                                                                                                                   TGATTTGAGTTGTCATTAGGAACCAAACAATAACTTTACTGTTATAGACTGCTTATATA
                                                                                                                                                                                                                         CAYCAYYTNGGNGARWSNGTNACNGGNYTNATGYTNGTNTAYCCNWSNACNTTYYTNCAY
                                                                                                                                                                                                                                                            CGTTAGTGTAGTGGGAGGATTATATTTCTCATTGTTTCTTGCTGTGAATTTTGGGTAAAT
                                                                                                                                                                                                                                                                                                   AAYACNGARAARAARGAYATHWSNGARTAYTAYGARCARYTNTTYCARWSNATHYTNAAR 234
                                                                                                                                                                                                                                                                                                                                    GAAACCAGGAAAAGGATCGTTCTTGAACCTTCACATCTCCAGGTATATGCAATTACATTT
                                                                                                                                                                                                                                                                                                                                                                             MGNYTNCARYTNAARAARTTYYTNYTNCAYMGNATGTTYYTNGTNGGNTAYATHCARGGN 174
                                                                                                                                                                                                                                                                                                                                                                                                                                                      CCNYTNYTNYTNCCNAARGTNCCNMGNACNAAYTAYYTNCAYYTNCARGARGARAARCAY 114
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2.0%; Score 42.2; D
26.4%; Pred: No. 1.2;
ative 62; Mismatches
425
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DB 9;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 759;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  of mouse
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                              547
                                                                                                     667
                                                                                                                                                354
                                                                                                                                                                                   607
                                                                                                                                                                                                                                                                                                                                        487
                                                                                                                                                                                                                         294
```

US-09-742-096-2/c

Sequence 2, Application US/09742096

Patent No. US20020155441A1

GENERAL INFORMATION:

APPLICANT: DAUBERSIES, PIERRE

APPLICANT: DAUBERSIES, PIERRE

ITILE OF INVENTION: MALARIAL PRE-ERYTHROCYTIC STAGE POLYPEPTIDE

FILE REFERENCE: 200773USDIV

CURRENT FILING DATE: 2000-12-22

PRIOR APPLICATION NUMBER: US 08/973,642

PRIOR APPLICATION NUMBER: US 08/973,642

PRIOR APPLICATION NUMBER: ECT/FR96/00894

PRIOR APPLICATION NUMBER: ECT/FR96/00894

PRIOR FILING DATE: 1996-06-12

PRIOR APPLICATION NUMBER: FR 95/07007

PRIOR APPLICATION NUMBER: FR 95/07007

PRIOR FILING DATE: 1995-06-13

NUMBER OF SEO ID NOS: 29

SOFTWARE: Patentin version 3.1

LENGTH: 5361

MOLECULES

```
밁
                                                                                                 Ş
                                                                                                                                       멍
                                                                                                                                                                     δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ş
                         δ
                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                             Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ş
밁
                                                                                                                                                                                                                                                                                                                                                     ; LENGTH: 6152
; TYPE: DNA
; ORGANISM: P. falciparum
US-09-742-096-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-09-742-096-1/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 1, Application US/09742096 Patent No. US20020155441A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
                                                                                                                                                                                                                                                                                                                      Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                           SEQ ID NO 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Matches 102;
                                                                                                                                                                                                                                                                                                                                                                                                                                          SOFTWARE: PatentIn version 3.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRIOR APPLICATION NUMBER: FR 95/07007 PRIOR FILING DATE: 1995-06-13 NUMBER OF SEQ ID NOS: 29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CURRENT APPLICATION NUMBER: US/09/742,096
CURRENT FILING DATE: 2000-12-22
PRIOR APPLICATION NUMBER: US 08/973,642
PRIOR FILING DATE: 1998-02-06
PRIOR APPLICATION NUMBER: PCT/FR96/00894
PRIOR FILING DATE: 1996-06-12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TITLE OF INVENTION: MALARIAL PRE-ERYTHROCYTIC STAGE POLYPEPTIDE MOLECULES FILE REFERENCE: 200773USODIV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT: DRUILHE, PIERRE APPLICANT: DAUBERSIES, PIERRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NAME/KEY: CDS
LOCATION: (1)..(5361)
OTHER INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ORGANISM: P. falciparum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  y Match 1.9%;
Local Similarity 49.8%;
hes 102; Conservative
                                                                                                                                                                                                                                                                                                  Match 1.9%;
Local Similarity 49.8%;
                                                                                                                                       4168 ATCTTTTAATTCTACAACTTCATCCAACGTCGTCGTTATATCATGTTCCTCTTCAATAAC
                                                                                                                                                                                                          4228 TAATATATCTTCTTCAAGATCTTTTAAATCAGATACTTTTTCGATCTTGTCTTCTTCGAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          3924 ATCTTTAATTCTACAACTTCATCCAACGTCGTCGTTATATCATGTTCCTCTTCAATAAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                3984 TAATATATCTTCTTCAAGATCTTTTAAATCAGATACTTTTTCGATCTTGTCTTCTTCGAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    3804 TTCTAATTCTTTAATTTTTCCATA 3780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  852 GTCTTTGACTTTTGCGGGTTTTCATGGAGCCTGAGTATGATACTCCCATATTCTGTGCTAAC
                                                                                                                                                                                                                                             TTCTAATTCTTTTAATTTTTCCATA 4024
                               AGTTATCAGGTCTGTATTGTCCAAA 996
                                                                   TTTTCTAATGTATCATCTTTTGCATCTATTATTTCTTTAGAATCTTCTGATAATGCTTT
                                                                                                     TTTTTCACATCTACCAACGTTAACATAGTTGTATTGTAAGTTATCTTCTAGTTATGCTGG 971
                                                                                                                                                                         GTCTTTGACTTTGCGGGTTTCATGGAGCCTGAGTATGATACTCCCATATTCTGTGCTAAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AGTTATCAGGTCTGTATTGTCCAAA 996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TTTTTCTAATGTATCATCTTTTGCATCTATTATTTCTTTAGAATCTTCTGATAATGCTTT 3805
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TTTTTCACATCTACCAACGTTAACATAGTTGTATTGTAAGTTATCTTCTAGTTATGCTGG
                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                              0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0;
                                                                                                                                                                                                                                                                                                  Score 40.2;
Pred. No. 13;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Pred.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 40.2;
                                                                                                                                                                                                                                                                                   Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        No. 12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DB 9;
                                                                                                                                                                                                                                                                                                                    DB 9;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     103;
                                                                                                                                                                                                                                                                                 103;
                                                                                                                                                                                                                                                                                                                  Length 6152;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                 Indels
                                                                                                                                                                                                                                                                                 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0;
                                                                   4049
                                                                                                                                                                         911
                                                                                                                                                                                                           4169
                                                                                                                                                                                                                                              851
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         971
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            3865
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               911
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  3925
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   851
                                                                                                                                       4109
                                                                                                                                                                                                                                                                                 0;
```

```
APPLICANT: Wasten, Wesley C.
APPLICANT: Tao, Nengbing
APPLICANT: Byatt, John C.
APPLICANT: Byatt, John C.
APPLICANT: Mathialagan, Nagappan
TITILE OF INVENTION: NUCLEIC ACID AND OTHER MOLECULES ASS
TITILE OF INVENTION: MUSCLE AND FAT DEPOSITION
FILE REFERENCE: 16511.006/37-21(10298)C
CURRENT APPLICATION NUMBER: US/09/960,352
CURRENT FILING DATE: 2001-09-24
NUMBER OF SEQ ID NOS: 15112
SEQ ID NO 1036
                                                                                                                                                                                                                                                                                                                                                                                  뫄
                                                                                                                                                                                                                                                                                                                                                                                                              Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                    В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ; FEATURE: ; OTHER INFORMATION: chemically treated genomic DNA (Homo sapiens) US-10-239-676-160
                                                                                                                                                                                                                                                                                                                                                Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT
                                                                                                                                                                                                                                             us-09-960-352-1036
                                                                                                                                                                                          Sequence 1036, Application US/09960352 Patent No. US20020137139A1 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NUMBER OF SEQ ID SEQ ID NO 160 LENGTH: 9515
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GENERAL INFORMATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 160, A Publication No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Matches 120;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT: OLEK, APPLICANT: PIEPE APPLICANT: BERLI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CURRENT APPLICATION NUMBER: US/10/239,676
CURRENT FILING DATE: 2002-09-24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT: BERLIN, Kurt TITLE OF INVENTION: Diagnosis of Diseases Associated with Gene Regulation FILE REFERENCE: 5013.1003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DE 10043826.1
PRIOR FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PRIOR APPLICATION NUMBER: PCT/EP01/03968
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ORGANISM: Artificial Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Local Similarity
                                                                                                                                                                                                                                                                                                                                                1035
                                                                                                                                                                                                                                                                                                                                                                                  2645
                                                                                                                                                                                                                                                                                                                                                                                                                                                    2585
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2525
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2465
                                                                                                                                                                                                                                                                                                                  2705 GCGTTAATATTT 2717
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       855
                                                                                                                                                                                                                                                                                                                                                                                                                    975
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     915
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ACCTTAATCCTTT 1047
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TTTGACTTTGCGGGTTTCATGGAGCCTGAGTATGATACTCCCATATTCTGTGCTAACTTT 914
                                                                                                                                                                                                                                                                                                                                                                                                                  TATCAGGTCTGTATTGTCCAAACTGATGTTCAATATTTTACTGTATGTTCTTCTTTAGGG 1034
                                                                                                                                                                                                                                                                                                                                                                                                                                                    TTCACATCTACCAACGTTAACATAGTTGTATTGTAAGTTATCTTCTAGTTATGCTGGAGT 974
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PIEPENBROCK, Christian
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Application US/10239676
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US20030082609A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NOS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2001-04-06
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1.98;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   228
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Score 40.2;
Pred. No. 17;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DB 9;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          133;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 9515;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2584
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2524
```

ASSOCIATED WITH LACTATION

```
Qy
                                                                                                                                               д
                       밁
                                                   Ω
                                                                                    문
                                                                                                                                                                             δÃ
                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                         δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-09-960-352-3400

; Sequence 3400, Application US/09960352

; Patent No. US20020137139A1
                                                                                                                                                                                                                                                                                                                                         ; ORGANISM: Bos taurus
; OTHER INFORMATION: Clone ID: 15-LIB3058-052-Q1-K1-D11
US-09-960-352-3400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δõ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ρy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ; TYPE: DNA;
; ORGANISM: Bos taurus
; OTHER INFORMATION: Clone ID: 05-LIB3058-031-Q1-K1-B1
US-09-960-352-1036
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Qy
                                                                                                                                                                                                                                                                                                                                                                                                                     SEQ ID NO 3400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                             Matches 119;
                                                                                                                                                                                                                                                                                                           Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT: Byatt, John C.
APPLICANT: Mathialagan, Nagappan
TITLE OF INVENTION: NUCLEIC ACID AND OTHER MOLECULES ASSOCIATED WITH LACTATION AND
TITLE OF INVENTION: MUSCLE AND FAT DEPOSITION
FILE REFERENCE: 16511.006/37-21(10298)C
CURRENT APPLICATION NUMBER: US/09/960,352
CURRENT FILING DATE: 2001-09-24
                                                                                                                                                                                                                                                                                                                                                                                                                                         NUMBER OF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT: Warren,
                                                                                                                                                                                                                                                                                                                                                                                       LENGTH: 446
TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LENGTH: 344
                                                                                                                                                                                                                                                                                            Local Similarity
                                                                                                                                                              855 TTTGACTTTGCGGGTTTCATGGAGCCTGAGTATGATACTCCCATATTCTGTGCTAACTTT
                                                                                                                                                                                                                                     919 CATCTACCAACGTTAACATAGTTGTATTGTAAGTTATCTTCTAGTTATGCTGGAGTTATC 978
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             799
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             123;
                                                                                                                                                                                                        SEQ ID NOS: 15112
                                              TATCAGGTCTGTATTGTCCAAACTGATGTTCAATATTTTACTGTATGTTCTTCTTTAGGG 1034
                  TTCACATCTACCAACGTTAACATAGTTGTATTGTAAGTTATCTTCTAGTTATGCTGGAGT 974
                                                                                                                                            TTTTTTTTTTTTATTATATT 270
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TAATCCTTTGCATCAGTTGACT 1060
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AGGTCTGTATTGTCCAAACTGATGTTCAATATTTTACTGTATGTTCTTCTTTAGGGACCT 1038
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ACTTTGCGGGTTTCATGGAGCCTGAGTATGATACTCCCATATTCTGTGCTAACTTTTTCA 918
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Tao, Nengbing
                                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1.8%;
ilarity 46.9%;
Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Wesley C.
                                                                                                                                                                                                                                                                                         1.8%;
                                                                                                                                                                                                                                                                      ; Score 38.6; DE; Pred. No. 7.5; 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 39.6;
Pred. No. 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Mismatches 139; Indels
                                                                                                                                                                                                                                                                                                        DB 10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DB 10;
                                                                                                                                                                                                                                                                        134; Indels
                                                                                                                                                                                                                                                                                                    Length 446;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length
                                                                                                                                                                                                                                                                        0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0
                                                                               275
                                                                                                                                            215
                                                                                                                                                                        914
                          CURRENT APPLICATION NUMBER: US/09/933,267A
CURRENT FILING DATE: 2001-08-21
PRIOR APPLICATION UNMBER: 60/160626
PRIOR FILING DATE: 1999-10-20
PRIOR APPLICATION NUMBER: 60/183756
PRIOR FILING DATE: 2000-02-22
PRIOR APPLICATION NUMBER: 09/692414
PRIOR APPLICATION NUMBER: 09/692414
PRIOR PILING DATE: 2000-10-20
PRIOR PILING DATE: 2000-10-24
PRIOR PILING DATE: 2001-01-24
PRIOR FILING DATE: 2001-01-24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ωy
                                                                                                                                                                                                                                                                                                   US-09-933-267A-1
                                                                                                                                                                                                                                                                                                                                                                                              δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                            Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US-09-960-352-5785
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   В
                                                                                                                                                                                                                                    Sequence 1, Application US/09933267A
Patent No. US20020123095A1
GENERAL INFORMATION:
APPLICANT: Kalush, Francis et al.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Best Local Sin
Matches 113;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GENERAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 5785,
                                                                                                                                                                                TITLE OF INVENTION: Estrogen receptor alpha variants TITLE OF INVENTION: methods of detection thereof FILE REFERENCE: CL000258C14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FEATURE:
FILING DATE:
                APPLICATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            101
                                                                                                                                                                                                                                                                                                                                                                                                                                  221
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               161
              NUMBER: 09/804076
```

2001-03-13

```
; NAME/KEY: unsure
; LOCATION: (76), (90)
; OTHER INFORMATION: unsure at all n locations
; OTHER INFORMATION: Clone ID: 25-LIB3057-018-Q1-K1-G1
US-09-960-352-5785
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT: Warren, Wesley C.
APPLICANT: Tao, Nengbing
APPLICANT: Byatt, John C.
APPLICANT: Byatt, John C.
APPLICANT: Mathialagan, Nagappan
TITLE OF INVENTION: NUCLEIC ACID AND OTHER MOLECULES ASSOCIATED WITH LACTATION
TITLE OF INVENTION: MUSCLE AND FAT DEPOSITION
FILE REPERENCE: 16511.006/37-21(10298)C
CURRENT APPLICATION NUMBER: US/09/960,352
CURRENT FILING DATE: 2001-09-24
NUMBER OF SEQ ID NOS: 15112
SEQ ID NO 5785
LENGTH: 516
                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Patent No. US20020137139A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ORGANISM: Bos taurus
                                                                                                                                                                                                                                                                                                         795 TIGCTITAGTCCCATTICCTTACTTTCAATTGATTGTATGTTTTGTATCTTCGCTTAGGTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1035 ACCTTAATCCTTT 1047
                                                                                                                                                                                                                                  855 TTTGACTTTGCGGGGTTTCATGGAGCCTGAGTATGATACTCCCCATATTCTGTGCTAACTTT 914
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            INFORMATION:
336 TTTTTTATTTTT
                                         TATCAGGTCTGTATTGTCCAAACTGATGTTCAATATTTTACTGTATGTTCTTCTTTA 1031
                                                                                                                                                                                   TTCACATCTACCAACGTTAACATAGTTGTATTGTAAGTTATCTTCTAGTTATGCTGGAGT 974
                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Application US/09960352
                                                                                                                                                                                                                                                                                                                                                                                               1.8%;
                                                                                                                                                                                                                                                                                                                                                                            0;
                                                                                                                                                                                                                                                                                                                                                                         Score 38.6; DB 10;
Pred. No. 8.2;
0; Mismatches 124;
                                                                                                                                                                                                                                                                                                                                                                                                                      Length
                                                                                                                                                                                                                                                                                                                                                                                                                        516;
                                                                                                                                                                                                                                                                                                                                                                            0
                                                                                                                                                                                                                                                                                                                                                                         Gaps
```

```
Š
                                  밁
                                                           δ
                                                                                                   В
                                                                                                                                 Ş
                                                                                                                                                                     밁
                                                                                                                                                                                                 Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-09-796-256A-11/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ş
                                                                                                                                                                                                                                                                                                            US-09-796-256A-11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-09-933-267A-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence 11, Application US/09796256A Patent No. US20020078477A1
                                                                                                                                                                                                                                                                                                                                                                           SEQ ID NO 11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Matches 98; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match 1.8%;
Best Local Similarity 49.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQ ID NO 1
                                                                                                                                                                                                                                         Matches
                                                                                                                                                                                                                                                                           Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT: Carraway, Daniel T
APPLICANT: Smeltzer, Richard H
TITLE OF INVENTION: Production of Syringyl Lignin
FILE REFERENCE: 50617/c-3532.0
CURRENT APPLICATION NUMBER: US/09/796,256A
CURRENT FILING DATE: 2001-02-28
PRIOR APPLICATION NUMBER: US60/033381
PRIOR FILING DATE: 1996-12-16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LENGTH: 465237
TYPE: DNA
ORGANISM: human
                                                                                                                                                                                                                                                                                                                                                                                         NUMBER OF SEQ ID NOS: 11 SOFTWARE: Patentin Ver.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NUMBER OF SEQ ID NOS: 2
SOFTWARE: FastSEQ for Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PRIOR APPLICATION NUMBER: 09/826314 PRIOR FILING DATE: 2001-04-05
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICANT: Chiang, Vincent L
APPLICANT: Carraway, Daniel
                                                                                                                                                                                                                                                                                                                                                                                                                          PRIOR FILING DATE: 1997-12-12
                                                                                                                                                                                                                                                                                                                    LENGTH: 2251
TYPE: DNA
ORGANISM: Pinus taeda
                                                                                                                                                                                                                                                                                                                                                                                                                                           PRIOR APPLICATION NUMBER:
                                                                                                                                                                                                                                                       Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               310062 AATAAATGTAATATCAT 310078
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              310002 TTTTAAAAGTAGATAATTAAATCTTAATTTACTATTTTTACACATGGTGAAACTAGTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             309942 GAAATTTGTTTATATTAATAGGAATTTTATAGCCTTATCCCTGGGTAGAAATTCAGTTT 31000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 309882 TATGTATCTACTTTTGATATTTATCTATCGAGAAGACTTTTCTCCTTATTGTTTGCTCT
                                                                                                                                                                                                     1083 AGTATTATAACAAGATAATGTCCATATATCACAAATATGCTGAGGTGACCACAAGAATAC 1142
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                473 TATGCAATTACATTTCGTTAGTGTAGTGGGAGGATTATATTTCTCATTGTTTCTTGCTGT
                                    440
                                                                                                                                                                    653 GAAAAGTATAGTAGCAT 669
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               593 TAGACTGCTTATAAGTAAAAGTTCAGATTTTGTTTTTCTAATCACGAAACTGTTTCAG
                                                                                                                                                                                                                                      .ch 1.8%;
.l Similarity 49.7%;
97; Conservative
TTATTTGCAGACTTT 1217
                                                                                                   CTTATTAAAACACCCTTATTCCATAAAATAAAGATACGTTAATTGGATTCGAACTATAA
                                                                  ACCAAATTACTCAATTGCAAGTAAACCTAATGCTGAGGTGTAAATGACTGATCTTGAGAT 1202
                                 08/991677
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Score 38.6; DB IV;
Pred. No. 4e+02;
Pred. No. 4e+02;
                                                                                                                                                                                                                                         0; Mismatches
                                                                                                                                                                                                                                                       Score 38.2; DB 10;
Pred. No. 24;
                                                                                                                                                                                                                                      98;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         in Gymnosperms
                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 465237;
                                                                                                                                                                                                                                                                       Length 2251;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0;
                                                                                                                                                                                                                                      0;
                                                                                                                                                                                                                                    Gaps
                                                                                                   441
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 652
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                532
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                310061
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 309941
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0;
                                                                                                                                                                                                                                      0;
                                                                                                                                                                                                                                                                                                                                                                                                                        δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       당
```

```
밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-09-783-590-7986/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US-09-790-988-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT 12
US-09-790-988-1/c
SOFTWARE: PatentIn Ver. 2
SEQ ID NO 7986
LENGTH: 228
                                                                                                                                                                                                                                                                                                                                                                                                                   GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 7986, Application Patent No. US20020110850A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Matches 130;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQ ID NO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 1, Application US/09790988 Patent No. US20020127687A1
                                                                                      APPLICANT: Rosen, Craig A.
APPLICANT: Ruben, Steven M.
APPLICANT: Ruben, Steven M.
TITLE OF INVENTION: Human Genes, Sequences, and Expression Products 16.2
FILE REFERENCE: PO-16.2C1
CURRENT APPLICATION NUMBER: US/09/783,590
CURRENT FILING DATE: 2000-02-15
PRIOR APPLICATION NUMBER: 08/420,856
PRIOR APPLICATION NUMBER: 08/420,856
PRIOR APPLICATION NUMBER: 08/346,731
PRIOR FILING DATE: 1995-04-12
PRIOR FILING DATE: 1994-11-21
PRIOR FILING DATE: 1994-11-21
PRIOR FILING DATE: 1994-11-21
                                                                                                                                                                                                                                                                                                                   APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRIOR APPLICATION NUMBER: JP2000-107160 PRIOR FILING DATE: 2000-04-07 NUMBER OF SEQ ID NOS: 7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CURRENT APPLICATION NUMBER: US/09/790,988
CURRENT FILING DATE: 2001-02-23
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICANT: SAKAKI, YOSHIYUKI
TITLE OF INVENTION: GENOME DNA OF BACTERIAL SYMBIONT OF APHIDS
FILE REFERENCE: 081356/0159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT: SHIGENOBU, SHUJI
APPLICANT: WATANABE, HIDEMI
APPLICANT: HATTORI, MASAHIRA
                                                                                                                                                                                                                                                                                                                                                                APPLICANT: Dillon, Patrick J. APPLICANT: Haseltine, Willia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LENGTH: 64
TYPE: DNA
                                                                       NUMBER OF SEQ ID NOS: 12485
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SOFTWARE: PatentIn Ver. 2.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ORGANISM: Buchnera sp.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       / Match 1.8%;
Local Similarity 45.9%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  260356 TAATGAATACTATTTTGTAATTTTTTATCGAAACATGTTATAT 260314
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        260416
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    260476 ATTCCTCTCTGCACTCGATTAATAATTTTTTTAACGCTTTCAATTATGTCCCATCTTCCA 260417
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     260596 AATAAAAAATTACTGATTCTTTTTCTCCTCCTGTTCTÄATAACTAAATCTACTGGAAGA 260537
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         928
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               808 ATTTCCTTACTTTCAATTGATTGATTGTTTGTATCTTCGCTTAGGTCTTTGACTTTGCGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                748 AATAGAGAATGAGACAATGCAGGTTTAACTTCAGCAGTACAAACTGATTGCTTTAGTCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         380 ATGTTTTCAAAATTT 366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        640681
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CCATAATTTGCTGCTATATTTAAAATTAAACCGGTATTGTCAAAAGTAATTTGTTCTGCA 260357
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ACGTTAACATAGTTGTATTGTAAGTTATCTTCTAGTTATGCTGGAGTTATCAGGTCTGTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TTGTCCAAACTGATGTTCAATATTTTACTGTATGTTCTTCTTT 1030
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GTTTCATGGAGCCTGAGTATGATACTCCCATATTCTGTGCTAACTTTTTCACATCTACCA
                                                                                                                                                                                                                                                                                                                                                                     Haseltine, William
                                                                                                                                                                                                                                                                                                                                              Li, Haodong
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US/09783590
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0; Mismatches 153;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Score 38.2; DB 10
Pred. No. 5.6e+02;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DB 10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 640681;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    927
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  807
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         987
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    867
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    260477
```

```
Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ; OTHER INFORMATION: n equals a,t,g, or US-09-783-590-7986
                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT . 14
US-10-239-676-206
                                                     US-10-239-676-206
                                                                                                       SEQ ID NO 206
LENGTH: 17142
TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                 GENERAL INFORMATION
                                                                                                                                                                                                                                                                                                                                                                                             sequence 206, Application US/10239676
Publication No. US20030082609A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
                           Query Match
  Matches
                                                                                                                                                                                                                                                 CURRENT APPLICATION NUMBER: US/10/239,676
CURRENT FILING DATE: 2002-09-24
PRIOR APPLICATION NUMBER: PCT/EP01/03968
DE 10019058.8
DE 10019173.8
                                                                                                                                                                                                                                                                                                                 APPLICANT: BERLIN, Kurt
TITLE OF INVENTION: Diagnosis of Diseases Associated with Gene Regulation
FILE REFERENCE: 5013.1003
                                                                                                                                                                                                                                                                                                                                            APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                    APPLICANT: OLEK, Alexander
                                                                                                                                             2000-09-01
NUMBER OF SEQ ID NOS:
                                                                                                                                                                                               PRIOR FILING DATE: 2000-04-06
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LOCATION: (1)
OTHER INFORMATION: n equals a,t,g,
                                                                                         ORGANISM: Artificial
                                                                                                                                                                                                                         DE 10019058.1
DE 10019173.1
DE 10032529.1
DE 10043826.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 OTHER INFORMATION: n equals a,t,g,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       OTHER INFORMATION: n equals a,t,g,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             OTHER INFORMATION: n equals
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   OTHER INFORMATION: n equals
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NAME/KEY: misc feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LOCATION: (36)
OTHER INFORMATION: n equals
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NAME/KEY: misc feature
                                                                              FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NAME/KEY: misc feature LOCATION: (215)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NAME/KEY: misc feature
LOCATION: (214)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NAME/KEY: misc feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NAME/KEY: misc feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ORGANISM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LOCATION: (47)
                                                                                                                                                                                   2000-04-07
              Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ocal
                                                                 INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 604 TATAAGTAAAAGTTCAGATTTTGTTT 629
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            162
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    544 AAATTGATTTGAGTTGTCATTAGGAACCAAACAAATAACTTTACTGTTATAGACTGCTTA 603
1.8%;
l Similarity 49.5%;
98; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TGTACTGGATAGTAAAGAGTTGCTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAGTTATTTAAGATGCCACATGGCACTATATAAAGAATTTTAATGTTCTAGAGTTCTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Homo
                                                                                                                                                                                                                                                                                                                                                       PIEPENBROCK, Christian
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  sapiens
                                                                                                                                                                                                             2001-04-06
                                                                 chemically treated genomic
                                                                                           Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1.8%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             a,t,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         a,t,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   a,t,g,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0;
  0;
  Score 38; DB Pred. No. 89; 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 38; DB 10;
Pred. No. 7.3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ģ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ç
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       얹
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ů,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ç
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           77
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ი
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      C
          DB
89;
                           9; Length 17142;
  100;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             30;
                                                                  DNA (Homo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 228;
  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                  sapiens)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0
  0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             103
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0
     0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ρy
                                                                                                                                                                                                                                                   Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ω<sub>γ</sub>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Db
                                                                                                                      밁
                                                                                                                                                                        밁
                                                                                                                                                                                                Ş
                                                                                                                                                                                                                            멍
                                        Š
                                                                  밁
                                                                                         δÃ
                                                                                                                                             20
```

```
RESULT 15
US-10-239-676-44
                                                                                                                                                                                                                                                                                                                                                                                              US-10-239-676-44
                                                                                                                                                                                                                                                                                                                                                                                                                                                          2000-09-01
NUMBER OF SEQ 1
SEQ ID NO 44
LENGTH: 6025
TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PRIOR APPLICATION N
DE 10019058.8
DE 10019173.8
DE 10032529.7
DE 10043826.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence 44, Application US/102 Publication No. US20030082609A1
                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local (
                                                                                                                                                                                                                                                                                                                                Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CURRENT FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TITLE OF INVENTION: Diagnosis of Diseases Associated with Gene Regulation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT: OLEK, Alexander APPLICANT: PIEPENBROCK, C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FILE REFERENCE:
                                                                                                                                                                                                                                                                                                                                                                                                                             FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                              ORGANISM: Artificial Sequence
                                                                                                                                                                                                                                                                                                                                                                                                               OTHER INFORMATION: chemically treated genomic DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2000-04-06
                                                                                                                                                                                                                                                                                                                  Local 222;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             9416 AGTTTAGTATTTTTTAT 9433
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2763
                                                                                                                               2883
                                                              2943
                                                                                                                                                                                               592 ATAGACTGCTTATATAAGTAAAAGTTCAGATTTTGTTTTTCTAATCACGAAACTGTTTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          472 ATATGCAATTACATTTCGTTAGTGTAGTGGGAGGATTATATTTCTCATTGTTTCTTGCTG
                               742
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             652 GGAAAAGTATAGTAGCAT 669
                                                                                                                                                                                                                                                                                              502 GAGGATTATATTTCTCATTGTTTCTTGCTGAATTTTGGGTAAATTGATTTGAGTTGTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICATION NUMBER: US/10/239,676 FILING DATE: 2002-09-24
                                                                                                                                                                                                                                                                                                                                               Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TGAATTTTGGGTAAATTGATTTGAGTTGTCATTAGGAACCAAACAATAACTTTACTGTT 591
                                                                                                                               TATGGCAATAGAGAATGAGACAATGCAGGTTTAACTTCAGCAGTACAAACTGATTGCTTT
                                                                                                                                                              TTTTGTTTTCTAATCACGAAACTGTTTCAGGAAAAGTATAGTAGCATGACAGGACTAGA 681
AGAATTATTTGAATTTGGGAGGTGGAGGTTGTAGTGAGTTAAGATTTCGTTATTGTATTT
                                                                                             TGGTAAGACCGAACTTCAAATGCTTGCTTTTAAATCTTCAAAGATTAGACTCTTGAGGAG
                                                                                                                                                                                                                               ATTAGGAACCAAACAATAACTTTACTGTTATAGACTGCTTATATAAGTAAAAGTTCAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            BERLIN, Kurt
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ID NOS:
                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NUMBER: PCT/EP01/03968
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2001-04-06
                                                                                                                                                                                                                                                                                                                                              1./%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US/10239676
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Christian
                                                                                                                                                                                                                                                                                                                              Score 37.8; Di
Pred. No. 55;
0; Mismatches
                                                                                                                                                                                                                                                                                                                                0;
                                                                                                                                                                                                                                                                                                                                                                 DB
                                                                                                                                                                                                                                                                                                                                307;
                                                                                                                                                                                                                                                                                                                                                               9;
                                                                                                                                                                                                                                                                                                                                                                                                               (Homo sapiens)
                                                                                                                                                                                                                                                                                                                                                               Length 6025;
                                                                                                                                                                                                                                                                                                                                Indels
                                                                                                                                                                                                                                                                                                                                0,:
                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  651
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  9355
                                                                                                                                                                                                  2882
                                                                                                                                                                                                                                                                    2822
                                                                                                741
                                                                                                                                  2942
                                                                                                                                                                                                                                   621
```

	Search completed: June 24, 2003, 15:35:02	comple	Search
	3243 TTTTTTTTTATTTTTTTTTTTTTTTTTTTTTTTTTTT	3243	뮹
	982 TCTGTATTGTCCAAAACTGATGTTCAATATTTTACTGTATGTTCTTCTTT 1030	982	Qy
3242	3183 GAGAAAAAGATAGTATAAGATGTTTTATTTTTTTTTTT	3183	В
981	922 CTACCAACGTTAACATAGTTGTATTGTAAGTTATCCTTCTAGTTATGCTGGAGTTATCAGG 981	922	Qy
3182	3123 TTGTTGATCGCGTTGTTATTTTTTTTTGTTAGAAGTGGTGTTAGGTTATTTTTT	3123	뮹
921	TTGCGGGTTTCATGGAGCCTGAGTATGATACTCCC	862	Qy
3122	3063 GATAAGTGGATTTTTATTTATAGAGATTATTTATTGTTATTTAGATTATT	3063	₽.
861	802 AGTCCCATTTCCTTACTTTCAATTGATTGTTTGTTATCTTCGCTTAGGTCTTTGACT 861	802	Ωу

		•			•					
!										
									Э,	
1			•							
									* *	
					• •					
								14)	e e	
										0
	* **		. [A			2,				4
		* 0							A	
				* *		3 - T			. <b>.</b>	
		<sup>†</sup> 4	, · · ·		<b>F</b> ,	Ď.		*		**
	·	*		. *		***				
			ž						1	
				·	1	the major of the second of the				
	1 -	· · · · · · · · · · · · · · · · · · ·							F 2 1	
					19					
			1					t et u		
	•									
		· 4	¥.		ak B					*
	-dec					7-1				
					<u>.</u>				5 · ·	*1
		· .							*	* * * * * * * * * * * * * * * * * * * *
									- **	***
	1 <del>-</del>			•	· 15					
							8 3		1	* •
			, A . W1		* V	4/X	• .			
				* · · · · · · · · · · · · · · · · · · ·						
										ž.
			7.9							
				(V).		*				•
		• 7.								
			<b>*</b> :		,				4.5	
					• 4				-	
						*	.:		1	
										*:
						*			(4)	
					w <sup>-</sup>				2	<i>8</i> .
		¥								e. '
						*	•			
										•
	* .	***		*		4.		1 12		

```
Result
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Minimum DB seq
Maximum DB seq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Database :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           OM nucleic - nucleic search, using sw model
                                                                                                                                                      ŏ
                                                                                                                                                                                                                           Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                      Score
   46.8
46.8
46.2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   length: 0
length: 2000000000
                                 100.0
24.3
2.4
2.3
2.2
2.2
2.2
                                                                                                                                                      Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gapop 10.0 , Gapext 1.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-09-870-406A-32
2160
1 gaattccccacgtcaacgtg.....tcgtctctacctaatcaaca 2160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               June 24, 2003, 10:42:19; Search time 335 Seconds (without alignments)
14520.347 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2185239 seqs, 1125999159 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GenCore version 5.1.6
Copyright (c) 1993 - 2003 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         _Geneseq_101002:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /SIDS2/gcgdata/geneseq/geneseqn-embl/NA1984.DAT:*
/SIDS2/gcgdata/geneseq/geneseqn-embl/NA1985.DAT:*
/SIDS2/gcgdata/geneseq/geneseqn-embl/NA1985.DAT:*
/SIDS2/gcgdata/geneseq/geneseqn-embl/NA1987.DAT:*
/SIDS2/gcgdata/geneseq/geneseqn-embl/NA1988.DAT:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /SIDS2/gcgdata/geneseq/geneseqn-embl/NA1980.DAT:*
/SIDS2/gcgdata/geneseq/geneseqn-embl/NA1981.DAT:*
/SIDS2/gcgdata/geneseq/geneseqn-embl/NA1982.DAT:*
                                                                                                                                                                                                                                                                                                                                                /SIDS2/gcgdata/geneseq/geneseqn embl/NA1991.DAT:*
/SIDS2/gcgdata/geneseq/geneseqn embl/NA1992.DAT:*
/SIDS2/gcgdata/geneseq/geneseqn embl/NA1993.DAT:*
/SIDS2/gcgdata/geneseq/geneseqn embl/NA1993.DAT:*
/SIDS2/gcgdata/geneseq/geneseqn embl/NA1995.DAT:*
/SIDS2/gcgdata/geneseq/geneseqn embl/NA1995.DAT:*
/SIDS2/gcgdata/geneseq/geneseqn embl/NA1997.DAT:*
/SIDS2/gcgdata/geneseq/geneseqn embl/NA1997.DAT:*
/SIDS2/gcgdata/geneseq/geneseqn embl/NA1998.DAT:*
/SIDS2/gcgdata/geneseq/geneseqn embl/NA1999.DAT:*
/SIDS2/gcgdata/geneseq/geneseqn embl/NA1999.DAT:*
                                                                                                                                                                                                                                                                                         /SIDS2/gcgdata/geneseq/geneseqn-emb1/NA2000.DAT:*
/SIDS2/gcgdata/geneseq/geneseqn-emb1/NA2001B.DAT:*
/SIDS2/gcgdata/geneseq/geneseqn-emb1/NA2001B.DAT:*
/SIDS2/gcgdata/geneseq/geneseqn-emb1/NA2002.DAT:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          'SIDS2/gcgdata/geneseq/geneseqn-emb1/NA1988.DAT:*
/SIDS2/gcgdata/geneseq/geneseqn-emb1/NA1989.DAT:*
/SIDS2/gcgdata/geneseq/geneseqn-emb1/NA1990.DAT:*
                                                                                                                                                      Length
                                                                           2160
1308
14041
12142
                                                                                                                                                       DB
                                                                                                                                                      IJ
                 ABA91766
AAC38032
AAH48024
ABL33672
ABK40057
AAS63344
ABL32655
ABL70318
    AAS61263
                                                                                                                                                                                                  SUMMARIES
                                                                                                                                              Description
Human immune syste
Chemically treated
Human gene regulat
                                            Chemically pretrea
                                                          Human immune syste
Human chemically p
                                                                                      Arabidopsis phytoc
Arabidopsis thalia
Internal control B
 O
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    റ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           იი
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                exon
                                                                           intron
                                                                                                                        exon
                                                                                                                                                                                                                                                                                                                                                                                   07-MAY-2002
                                                                                                                                                                                                                                                                                                                                                                                                               ABA91766;
                                                                                                                                                                                                                                                                                                                                                                                                                                               ABA91766 standard; DNA; 2160 BP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       46.2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2.1
```

41.2	41.6	41.8	4	42.2		•		•	42.6	2	2	42.8	:-	•		43.8	43.8	43.8	44.2	44.2	44.2	44.2	44.2	44.2	•	•	44.6			5	5	5	45.6	•	46.2
					•														٠														2.1		
							5572	16750	16750	1995	1995	17183	8576	6980	83391	10048	10048	6171	10205	10205	6160	6160	5216	5216	10006	4590	5718	5718	11670	3	772	63	13431	53	15224
23	24	24	21	22	24	24	24	24	22	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	22	24	22	24	24	24	24	22	22	24
ABL29	ABL33335	ABL33	AAF	AAS46	AAD38	ABL34		ABL32521	AAS46314	94	ABQ20942	ABL32486	ABL34228	ABL32453	ABQ67093	AAS61251	ABL70313	ABL32788	ABK31274	ABL70235	ABK31273	ABL70234	4	234	$\sim$	406	337	646	432	ô	372		87	D087	ABK31359
Drosophila melanog	Human immune syste	Human 1mmune syste	Arabidopsis thalia	Tumour suppressor	Mouse zlmda24 dege	Human metastasis a	Human immune syste	Human immune syste	Tumour suppressor		nucleoti	immune sys	immune sys		angio			Human immune syste	Signal transductio	Chemically treated	Signal transductio	Chemically treated	Human metastasis a	immune		AOD9604-as	μ.	r suppi	Ö	immune	immune	immune	persicon	ersicon pen	Signal transductio

## ALIGNMENTS

Arabidopsis thaliana HY2; biliverdin reductase; phytochromobilin synthase; phytochrome; phytofluor; plant; enzyme; gene; ds. Arabidopsis phytochromobilin synthase HY2 gene. transit\_peptide (first entry) /\*tag= a
//gene= "HY2"
//product= "Phytochromobilir
//note= "contains introns"
le 248.382 /number= 1 470..652 /\*tag= d /number= 1 653..769 /\*tag= k 153..469 Location/Qualifiers 248..1916 /number-/\*tag= c Þ "Phytochromobilin\_synthase'

```
08-JUN-2000;
26-FEB-2001;
29-MAY-2001;
                                             05-JUN-2001;
                                                                13-DEC-2001
                                                                               WO200194548-A2
                                                                                                                            variation
                                                                                                                                                             variation
                                                                                                                                                                                               variation
                                                                                                                                                                                                                                 variation
                                                                                                                                                                                                                                                                                                                                               exon
                                                                                                                                                                                                                                                                                                                                                                                                 exon
                                                                                                                                                                                                                                                                                                                                                                                                                                                    exon
                                                                                                                                                                                                                                                                           variation
                                                                                                                                                                                                                                                                                                                      variation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         exon
                                                                                                                                                                                                                                                                                                                                                                       intron
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       exon
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            exon
                                                                                                                                                                                                                                                                                                                                                                                                                           intron
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             intron
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                intron
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   intron
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      intron
           ; 2000US-210286P.
; 2001US-271758P.
; 2001US-0210286.
                                             2001WO-US18326
                                                                                                                /standard_name= "Si
/note= "in intron, I
replace(1910,T)
/*tag= w
                                                                                                                                                                                                                    /note= "amino acid change to Asn in erecta and Wassilewskija ecoreplace(515,A)
/*tag= t
                                                                                               /standard_name=
/note= "silent,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /*tag= g
/number= 3
947..1032
                                                                                                                                                            /note= "silent,
replace(1145,T)
                                                                                                                                                                                      replace(844,A)
/*tag= u
                                                                                                                                                                                                                                                                         replace(364,T)
                                                                                                                                                                                                                                                                                                                                           1663..1742

/*tag= p

/number= 7

1742..2148
                                                                                                                                                                            /standard_name=
                                                                                                                                                                                                     /standard_name= "S
/note= "in intron,
                                                                                                                                                                                                                                                                             /standard_name= "Single nucleotide polymorphism"
/note= "inserted T at nucleotide 234 in Landsberg
erecta and Wassilewskija ecotypes"
                                                                                                                                                                                                                                                                                                                                                                                                                1524..1611
/*tag= n
                                                                                                                                                                                                                                                                                                                                                                                                                                         1419..1523
/*tag= m
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1345..1418
/*tag= 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /number=
852..946
                                                                                                                                                                                                                                                                                                                           /number=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /number=
1127..121
                                                                                                                                                                                                                                                                                                            *tag=
                                                                                                                                                                                                                                                                                                                   eplace(234, TT)
                                                                                                                                                                                                                                                                                                                                    *tag= q
                                                                                                                                                                                                                                                                                                                                                                              'number=
                                                                                                                                                                                                                                                                                                                                                                                       /*tag= o
                                                                                                                                                                                                                                                                                                                                                                                               612..1662
                                                                                                                                                                                                                                                                                                                                                                                                       number=
                                                                                                                                                                                                                                                                                                                                                                                                                                number-
                                                                                                                                                                                                                                                                                                                                                                                                                                                            number=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     'number=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              *tag=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              'number=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /*tag=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /*tag=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                number=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ′*tag=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /*tag=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    213..134
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          .946
                                                                                            "Single nucleotide polymorphism"
Wassilewskija ecotype"
                                                                                                                                                                "Single nucleotide polymorphism"
Landsberg erecta ecotype"
                                                                                                                                                                                                             "Single
                                                                                                                                "Single nucleotide polymorphism'
on, Landsberg erecta ecotype"
                                                                                                                                                                                                    ngle nucleotide |
Landsberg erecta
                                                                                                                                                                                                                                    in Landsbeer ecotypes
                                                                                                                                                                                                    polymorphism"
a ecotype"
                                                                                                                                                                                                                                             polymorphism"
n Landsberg
B
             Qy
                                 망
                                              ρy
                                                                   밁
                                                                                  Qy
                                                                                                     밁
                                                                                                                    Ş
                                                                                                                                      맑
                                                                                                                                                     Q
                                                                                                                                                                        В
                                                                                                                                                                                        Š
                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                        δÃ
                                                                                                                                                                                                                                                   Query Match
Best Local
                                                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                          hes 2160;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (REGC ) UNIV CALIFORNIA.
```

AAAGAAAAGATTCTTACTTAGAGTCTCTGCTGTGTCGTATAAGGAATTCGCAGAGTCTGC

420 420

360

360 300 300 240

361

301 301 241 181

240

TGTTGTAATGGCTTTATCAATGGAGTTTGGGTTTTCAATTGGGTCATGCTTCAAGGCACC

 ${ t TGTTGTAATGGCTTTATCAATGGAGTTTGGGTTTTCAATTGGGTCATGCTTCAAGGCACC$ 

ACCATGACTCGGACGGATGTTGAAATTCATTGTCGTTGCCAATTGCGTTTGTCTCACTGA

120

60 60 0

120

GAATTCCCCACGTCAACGTGACTGTGCATTCCACGTGGCGGATGTGGGCCCTATAGTTGG

GAATTCCCCACGTCAACGTGACTGTGCATTCCACGTGGCGGATGTGGGCCCCTATAGTTGG

121 121 61 61

Similarity

100.0%; .08;

Score 2160; Pred. No. 0; Mismatches

DB 24; 0,

2160;

Conservative

0;

Indels Length

0, Gaps

241 181

```
The present sequence is that of the HY2 gene of Arabidopsis thaliana cecotype Columbia on chromosome 3, with single nucleotide polymorphisms found in ecotypes Landsberg erecta and wassilewskija cindicated. A positional cloning strategy was used to isolate the HY2 gene. For fine mapping, an hy2-1 mutant of ecotype Landsberg cerecta was outcrossed with wild-type ecotype Columbia, and a mapping population was selected from F2 families with a long hypocotyl phenotype. This localised the gene to 2 overlapping bacterial artificial chromosome clones, and the gene was finally cidentified by sequencing of wild-type and mutant alleles. The HY2 gene encodes a ferredoxin-dependent biliverdin reductase, phytochromobilin synthase (see AAM50863), that is related to a family of proteins found in oxygenic photosynthetic bacteria. The Cexample of bilin reductases of the invention, which are useful e.g. for the conversion of biliverdin to phytobilin and the assembly of holophytochromes or phytofluors. The cloning of the Arabidopsis of the related will help to identify phytochromobilin synthase genes from a chief of proteins from a chercy in the conversion of hilverdin to synthase genes from the related to a state of the conversion of biliverdin to phytobilin and the assembly of the related to a chercy of the conversion of hilverdin to phytobilin and the assembly of the related to a chercy of the area of the area of the area of the area of the area of the area of the area of the area of the area of the area of the area of the area of the area of the area of the area of the area of the area of the area of the area of the area of the area of the area of the area of the area of the area of the area of the area of the area of the area of the area of the area of the area of the area of the area of the area of the area of th
                                                                                                             other plant species. A claimed method of producing a photoactive holophytochrome involves co-expressing a haem oxygenase, an apophytochrome and a ferredoxin-dependent bilin reductase in a cell, where the cell produces the photoactive holophytochrome and where the apophytochrome and/or the bilin reductase are expressed by heterologous nucleic acids. The cell may be an algal, yeast, bacterial, plant, insect or mammalian cell, and the bilin reductase is preferably an HY2 family bilin reductase.
Sequence 2160 BP; 645 A; 361 C; 461 G; 693 T; 0 other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Novel isolated HY2 family bilin activity, useful for converting
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Example 3; Fig 3B; 102pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        producing a photoactive holophytochrome and/or phytofluor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Lagarias JC,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Kochi T,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Frankenberg N,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        reductase having bilin red
biliverdin to phytobilin,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gambetta GA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Montgomery BL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               reductase in, and for
                                                                                                                                                                                               reductase
```

В δ ₽ Q

```
1381
                                                                                                                                   1321
                                                                                                                                                                                         1261
                                                                                                                                                                                                                                                1201
                                                                                                                                                                                                                                                                             1201
                                                                                                                                                                                                                                                                                                        1141
                                                                                                                                                                                                                                                                                                                                    1141
                                                                                                                                                                                                                                                                                                                                                               1081
                                              1441
                                                                                                                                                                                                                                                                                                                                                                                                                                                     1021
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 961
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             961
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  481
                                                                                                                                GTTCTTCTTTAGGGACCTTAATCCTTTGCATCAGTTGACCAGACCGGACTTACCAAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TCTTCGCTTAGGTCTTTGACTTTGCGGGTTTCATGGAGCCTGAGTATGATACTCCCATAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TTTAGAAGAAACCAGGAAAAGGATCGTTCTTGAACCTTCACATCTCCAGGTATATGCAAT
                AAGTGAGGGAGGAGATGGAACCATCTCATGTGAGAGCCAATTGTGAAGCACAACACAAGT
                                                                                                                                                                                      ATTTATTTGCAGACTTTCCCATGGGGAGGGAAATTGACTGGTGAATCCATAAAGTTTTTC
                                                                                                                                                                                                                                                                                                      AGTTATGCTGGAGTTATCAGGTCTGTATTGTCCAAACTGATGTTCAATATTTTACTGTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TCTGTGCTAACTTTTTCACATCTACCAACGTTAACATAGTTGTATTGTAAGTTATCTTCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GGTAAATTGATTTGAGTTGTCATTAGGAACCAAACAAATAACTTTACTGTTATAGACTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TACATTTCGTTAGTGTAGTGGGAGGATTATATTTCTCATTGTTTCTTGCTGTGAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TCTGTGCTAACTTTTCACATCTACCAACGTTAACATAGTTGTATTGTAAGTTATCTTCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TACATTTCGTTAGTGTAGTGGGAGGATTATATTTCTCATTGTTTCTTGCTGTGAATTTTG
                                           1500
                                                                                                                                                                                                                                                                                                                                                                                                                        1080
                                                                                                                                                                                                                                                                                                                                                                                                                                                  1080
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     780
                                                                                                    1440
                                                                                                                                1380
                                                                                                                                                             1380
                                                                                                                                                                                        1320
                                                                                                                                                                                                                   1320
                                                                                                                                                                                                                                               1260
                                                                                                                                                                                                                                                                          1260
                                                                                                                                                                                                                                                                                                        1200
                                                                                                                                                                                                                                                                                                                                 1200
                                                                                                                                                                                                                                                                                                                                                               1140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1020
                   1500
                                                                         1440
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1020
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        960
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  960
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               660
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        660
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              900
RESULT 2
AAC38032
ID AAC3
XX AAC3
AC AAC3
AX AY AY AY
DT 17-(
XX AY Hyb
KW Hyb
KW PYC
KW met
XX AY
OS AY;
XX EP
XX EP
XX EP
XX EP
XX EP
XX EP
XX 25
PF 25
PF 25
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF 27
PF
                                                                                                                                                                                                                                                                                                                                                                                                                                                         Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Дb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               85
B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ωy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          뮰
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               οy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Дb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       νQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          뫄
                                                                                                                                06-SEP-2000
                                                                                                                                                                                                                                                                          Arabidopsis
                                                                                                                                                                                                                                                                                                        17-OCT-2000
                                                                                                                                                                                                                                                                                                                                   AAC38032;
                                                                                                                                                                                                                                                                                                                                                               AAC38032
                                                                                                    25-FEB-2000;
                                                                                                                                                                                      Arabidopsis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1741
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1681
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1681
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1621
                                                                                                                                                                                                                                                                                                                                                                                                                                      2101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2041
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2041
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1981
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1981
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1921
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1861
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1801
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1801
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1621
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1561
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1501
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1921
                                                                                                                                                                                                                                                                                                                                                               standard;
```

```
δÃ
                                                                                                                                                                                                                                                    1501
                      TTGGGAAGTCATATGAAACTCGTCCATGGGATTTAACAGGACAATTTATCGGCTAACAAT
                                                                                                                   ACAGACACTGTATCTGTATTGTTACAATGGATATTGATTTGGTGTTTGCAGGATCCTGGA
                                                                                                                                                                                                                                       GAGAATCCTCGAGTATGATATGATTTTAATGAAAATGTATTCGTCTCTACCTAATCAACA
                                             GAGAATCCTCGAGTATGATATGATTTTAATGAAAATGTATTCGTCTCTACCTAATCAACA
                                                                                                                               1860
                                                                                                                                                                                                                 1620
                                                                                                                                                                                                                            1620
                                                                      1980
                                                                                 1980
                                                                                                        1920
                                                                                                                                            1800
                                                                                                                                                      1800
                                                                                                                                                                                         1680
                                                                                                                                                                                                     1680
2160
                                                                                             1920
                                                                                                                                                                  1740
           2160
                       2100
                                  2100
                                                         2040
```

(first entry)

thaliana DNA fragment SEQ ID Š. 

Hybridisation assay; genetic mapping; protein identification; signal transdumetabolic pathway; promoter; terminat: apping; gene expression transduction pathway;

2000EP-0301439

05 05 05

Qγ

B 5

g

оу Оу Оу

25-FEB-1999; 05-MAR-1999; 09-MAR-1999; 23-MAR-1999; 25-MAR-1999; 29-MAR-1999; 99US-0121825. 99US-0123180. 99US-0123548. 99US-0125788. 99US-0126264. 99US-0126785.

	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	<u>א</u> א א א	2 2 2	PR	PR PR	PR	2 2 2	PR	PR	PR	מק א א	PR	PR	א קיי א	PR	PR	PR	PR	ק קקי	P R	PR	אַ על על	PR	PR	PR	PR	PR	PR PR	PR PR
	12- 13- 14- 16- 16-	08-	29- 30-	24-	21.	18.	18.				17	16		07	222	27-	24-	20-	18-	14	14	07	060	040	30	226	321	16	000
e.			AN AN	3 - JUN 3 - JUN 4 - JUN 8 - JUN	1 - JUN 2 - JUN 3 - JUN	-JUN-	- NDC	-JUN	-YOV-	-NON-	JUN-1	4-JUN-	0-JUN-1	7-JUN- 7-JUN-	)1-JUN-	-MAY-	- MAY -	MAY-		-MAY-	4-MAY-	6-MAY-	-MAY-	0-APR-	30-APR-	3-APR-	1-APR-	)8-APR-	1-APR-
	198	-199 -199	-1999 -1999 -1999	-199 -199	1-199 1-199 1-199	1-199 1-199	-199 -199	-199	-1999 -1999	-1999 -1999	'''	-1999; -1999;	-199 -199	-199 -199	-199	-199	-199	199	1999	-199	190	-19		7-19	λ-19 λ-19	-19	7-19	7-19	-
								•• ••							99	999	9 9 9	999	999	99,	99,	999	99;	99;	99;	99;	99;	99;	999;
	9908-0142977 9908-0142977 9908-0143542 9908-0143624 9908-0144005 9908-0144085 9908-0144086 9908-0144325	1066 1066 1066	066 066 066	1166 1166	166 166 166	166	166 166	990	990	990	990	990	166	990	991	991	99	999	999	999	999	999	99	99	99	99	999	99	99
	S-01 S-01 S-01 S-01	s-01 s-01 s-01	S-01	8 - 01 8 - 01	3 - 01 - 01	75-01 15-01	-2.5	18-0 0-8	75-0.5 0-8 0-8	18-0: 0-8:0	78-0 18-0	78-0 18-0	0-SE	75-0 15-0	JS-0 JS-0	78-0 78-0	78-0 0-8-0	US-0	US-0	us-o	0-50	us-0	us-o	us-o	us-o	0-50	US-0	-Sn	0-SD
	14297 14297 14354 14362 14400 14400 14408 14408	4205	4128	4003	3985	1397 1397 1397	394	1394	1394	1394	1394	1391 1394	1385	1375 1377 1386	1372 1375	1363	1356	1351	1343 1347	1342 1342	1342	1324 1328	1324 1324	1324 1324	1314 $1320$	1308	1304	99US-0128714. 99US-0129845.	1274
	0000 A 0 0 0 0		271	3 5	397			50.	587.		92.	19.	40.	24.	28.	92.	29.	24.	68.	19.	18.	63.	86.	07.	48.	191.	49.	114.	162. 34.
																							٠						
											•																		•
			•																										
			•						,																				
									,								·												
	*								,																				
			6						'n																				
	· .		0				÷		•					_															
			0				ē,		•											•									
	קק אק קי א קי א קי קי א קי קי קי א קי קי קי קי קי קי	, מק אק אק	א מים א מים א מים	PR PR	אי איק איק	PR	PR PR	PR	PR PR	PR	PR PR	PR PR	PR	PR	PR PR	PR PR	PR	PR PR	PR PR	. PR	PR	אים אים	P.R.	אל	יי פר פר פר פר פר פר פר פר פר פר פר פר פר	PR	ਸ਼ਕ	R7 R7	РЯ
	ಶಶಶಶಶಶಶಶೆ					, , , , ,					. PR 1:	PR 1:	PR 0	PR O		, z, z,				w # ;	<b>v</b> v	z z ;	י לא ש אנאנא		, ix		W W	PR 1	PR 1
	24-SEI R 29-SEI R 04-OCI R 05-OCI R 05-OCI R 07-OCI R 08-OCI R 12-OCI	20-SEI 22-SEI 23-SEI	10-SE 13-SE 15-SE	31-AU 01-SE 07-SE	27-AU 27-AU 30-AU	26-AU 27-AU	23-AU 25-AU	20-AU 20-AU	18-AU 20-AU	16-AU 17-AU	13-AU 13-AU	11-AU 11-AU	R 09-AU	R 06-AU	04 - AU	R 03-AU	02-AU	28-JU 02-AU	27-JU	R 26-JU	R 23-JU	R 22-JU	R 22-JU	R 21-JU	R 21-JU	R 20-JI	R 19-JI	R 19-JI	R 19-JI
	24-SEI R 29-SEI R 04-OCI R 05-OCI R 05-OCI R 07-OCI R 08-OCI R 12-OCI	20-SEI 22-SEI 23-SEI	10-SE 13-SE 15-SE	31-AU 01-SE 07-SE	27-AU 27-AU 30-AU	26-AU 27-AU	23-AU 25-AU	20-AU 20-AU	18-AU 20-AU	16-AU 17-AU	13-AU 13-AU	11-AU 11-AU	R 09-AU	R 06-AU	04 - AU	R 03-AU	02-AU	28-JU 02-AU	27-JU	R 26-JU	R 23-JU	R 22-JU	R 22-JU	R 21-JU	R 21-JU	R 20-JI	R 19-JI	R 19-JI	R 19-JI
	ಶಶಶಶಶಶಶಶೆ	20-SEI 22-SEI 23-SEI	10-SE 13-SE 15-SE	31-AU 01-SE 07-SE	27-AU 27-AU 30-AU	26-AU 27-AU	23-AU 25-AU	20-AU 20-AU	18-AU 20-AU	16-AU 17-AU	13-AU 13-AU	11-AU 11-AU	R 09-AU	R 06-AU	04 - AU	R 03-AU	02-AU	28-JU 02-AU	27-JU	R 26-JU	R 23-JU	R 22-JU	R 22-JU	R 21-JU	R 21-JU	R 20-JI	R 19-JI	R 19-JI	R 19-JI
	R 28-SEP-1999; R 29-SEP-1999; R 04-OCT-1999; R 05-OCT-1999; R 06-OCT-1999; R 08-OCT-1999; R 08-OCT-1999; R 12-OCT-1999;	20-SEP-1999; 22-SEP-1999; 23-SEP-1999;	10-SEP-1999; 13-SEP-1999; 15-SEP-1999;	31-AUG-1999; 01-SEP-1999; 07-SEP-1999;	27-AUG-1999; 27-AUG-1999; 30-AUG-1999;	26-AUG-1999; 27-AUG-1999;	23-AUG-1999; 25-AUG-1999;	20-AUG-1999; 20-AUG-1999; 23-AUG-1999;	18-AUG-1999; 20-AUG-1999;	16-AUG-1999; 17-AUG-1999;	13-AUG-1999; 13-AUG-1999;	10-AUG-1999; 11-AUG-1999; 12-AUG-1999;	R 09-AUG-1999; R 09-AUG-1999;	R 06-AUG-1999;	04-AUG-1999; 05-AUG-1999; 05-AUG-1999;	R 03-AUG-1999; R 04-AUG-1999;	02-AUG-1999; 02-AUG-1999;	28-JUL-1999; 02-AUG-1999;	27~JUL-1999; 27-JUL-1999;	R 26-JUL-1999; R 27-JUL-1999;	R 23-JUL-1999;	R 22-JUL-1999; R 23-JUL-1999;	R 22-JUL-1999;	R 21-JUL-1999; R 21-JUL-1999;	R 21-JUL-1999;	R 20-JUL-1999;	R 19-JUL-1999; R 20-JUL-1999;	R 19-JUL-1999; R 19-JUL-1999; R 19-JUL-1999;	R 19-JUL-1999;
,	R 24-SEP-1999; 990 R 28-SEP-1999; 990 R 29-SEP-1999; 990 R 04-OCT-1999; 990 R 05-OCT-1999; 990 R 06-OCT-1999; 990 R 07-OCT-1999; 990 R 08-OCT-1999; 990 R 12-OCT-1999; 990	20-SEP-1999; 99U 22-SEP-1999; 99U 22-SEP-1999; 99U	10-SEP-1999; 99U 13-SEP-1999; 99U 15-SEP-1999; 99U	31-AUG-1999; 99U 01-SEP-1999; 99U 07-SEP-1999; 99U	27-AUG-1999; 990 27-AUG-1999; 990 30-AUG-1999; 990	26-AUG-1999; 99U 27-AUG-1999; 99U	23-AUG-1999; 99U 25-AUG-1999; 99U	20-AUG-1999; 990 20-AUG-1999; 990 23-AUG-1999: 990	18-AUG-1999; 990 20-AUG-1999; 990	16-AUG-1999; 990 17-AUG-1999; 990	13-AUG-1999; 990 13-AUG-1999; 990	10-AUG-1999; 990 11-AUG-1999; 990 12-AUG-1999; 990	R 09-AUG-1999; 990 R 09-AUG-1999; 990	R 06-AUG-1999; 990	04-AUG-1999; 990 05-AUG-1999; 990	R 03-AUG-1999; 991 R 04-AUG-1999; 991	02-AUG-1999; 991 02-AUG-1999; 991	28-JUL-1999; 991 02-AUG-1999; 991	27-JUL-1999; 991 27-JUL-1999; 991	R 26-JUL-1999; 991	R 23-JUL-1999; 991	R 22-JUL-1999; 991 R 23-JUL-1999; 991	R 22-JUL-1999; 99; 89; 80; 80; 80; 80; 80; 80; 80; 80; 80; 80	R 21-JUL-1999; 99 R 21-JUL-1999; 99	R 21-JUL-1999; 99	R 20-JUL-1999; 99	R 19-JUL-1999; 99 R 20-JUL-1999; 99	R 19-JUL-1999; 99 R 19-JUL-1999; 99 R 19-JUL-1999; 99	R 19-JUL-1999; 99
,	R 24-SEP-1999; 990 R 28-SEP-1999; 990 R 29-SEP-1999; 990 R 04-OCT-1999; 990 R 05-OCT-1999; 990 R 06-OCT-1999; 990 R 07-OCT-1999; 990 R 08-OCT-1999; 990 R 12-OCT-1999; 990	20-SEP-1999; 99U 22-SEP-1999; 99U 22-SEP-1999; 99U	10-SEP-1999; 99U 13-SEP-1999; 99U 15-SEP-1999; 99U	31-AUG-1999; 99U 01-SEP-1999; 99U 07-SEP-1999; 99U	27-AUG-1999; 990 27-AUG-1999; 990 30-AUG-1999; 990	26-AUG-1999; 99U 27-AUG-1999; 99U	23-AUG-1999; 99U 25-AUG-1999; 99U	20-AUG-1999; 990 20-AUG-1999; 990 23-AUG-1999: 990	18-AUG-1999; 990 20-AUG-1999; 990	16-AUG-1999; 990 17-AUG-1999; 990	13-AUG-1999; 990 13-AUG-1999; 990	10-AUG-1999; 990 11-AUG-1999; 990 12-AUG-1999; 990	R 09-AUG-1999; 990 R 09-AUG-1999; 990	R 06-AUG-1999; 990	04-AUG-1999; 990 05-AUG-1999; 990	R 03-AUG-1999; 991 R 04-AUG-1999; 991	02-AUG-1999; 991 02-AUG-1999; 991	28-JUL-1999; 991 02-AUG-1999; 991	27-JUL-1999; 991 27-JUL-1999; 991	R 26-JUL-1999; 991	R 23-JUL-1999; 991	R 22-JUL-1999; 991 R 23-JUL-1999; 991	R 22-JUL-1999; 99; 89; 80; 80; 80; 80; 80; 80; 80; 80; 80; 80	R 21-JUL-1999; 99 R 21-JUL-1999; 99	R 21-JUL-1999; 99	R 20-JUL-1999; 99	R 19-JUL-1999; 99 R 20-JUL-1999; 99	R 19-JUL-1999; 99 R 19-JUL-1999; 99 R 19-JUL-1999; 99	R 19-JUL-1999; 99
,	R 28-SEP-1999; R 29-SEP-1999; R 04-OCT-1999; R 05-OCT-1999; R 06-OCT-1999; R 08-OCT-1999; R 08-OCT-1999; R 12-OCT-1999;	20-SEP-1999; 99U 22-SEP-1999; 99U 22-SEP-1999; 99U	10-SEP-1999; 99U 13-SEP-1999; 99U 15-SEP-1999; 99U	31-AUG-1999; 99U 01-SEP-1999; 99U 07-SEP-1999; 99U	27-AUG-1999; 990 27-AUG-1999; 990 30-AUG-1999; 990	26-AUG-1999; 99U 27-AUG-1999; 99U	23-AUG-1999; 99U 25-AUG-1999; 99U	20-AUG-1999; 990 20-AUG-1999; 990 23-AUG-1999: 990	18-AUG-1999; 990 20-AUG-1999; 990	16-AUG-1999; 990 17-AUG-1999; 990	13-AUG-1999; 990 13-AUG-1999; 990	10-AUG-1999; 990 11-AUG-1999; 990 12-AUG-1999; 990	R 09-AUG-1999; 990 R 09-AUG-1999; 990	R 06-AUG-1999; 990	04-AUG-1999; 990 05-AUG-1999; 990	R 03-AUG-1999; 991 R 04-AUG-1999; 991	02-AUG-1999; 991 02-AUG-1999; 991	28-JUL-1999; 991 02-AUG-1999; 991	27-JUL-1999; 991 27-JUL-1999; 991	R 26-JUL-1999; 991	R 23-JUL-1999; 991	R 22-JUL-1999; 991 R 23-JUL-1999; 991	R 22-JUL-1999; 99; 89; 80; 80; 80; 80; 80; 80; 80; 80; 80; 80	R 21-JUL-1999; 99 R 21-JUL-1999; 99	R 21-JUL-1999; 99	R 20-JUL-1999; 99	R 19-JUL-1999; 99 R 20-JUL-1999; 99	R 19-JUL-1999; 99 R 19-JUL-1999; 99 R 19-JUL-1999; 99	R 19-JUL-1999; 99
,	R 24-SEP-1999; 990 R 28-SEP-1999; 990 R 29-SEP-1999; 990 R 04-OCT-1999; 990 R 05-OCT-1999; 990 R 06-OCT-1999; 990 R 07-OCT-1999; 990 R 08-OCT-1999; 990 R 12-OCT-1999; 990	20-SEP-1999; 99U 22-SEP-1999; 99U 22-SEP-1999; 99U	10-SEP-1999; 99U 13-SEP-1999; 99U 15-SEP-1999; 99U	31-AUG-1999; 99U 01-SEP-1999; 99U 07-SEP-1999; 99U	27-AUG-1999; 990 27-AUG-1999; 990 30-AUG-1999; 990	26-AUG-1999; 99U 27-AUG-1999; 99U	23-AUG-1999; 99U 25-AUG-1999; 99U	20-AUG-1999; 990 20-AUG-1999; 990 23-AUG-1999: 990	18-AUG-1999; 990 20-AUG-1999; 990	16-AUG-1999; 990 17-AUG-1999; 990	13-AUG-1999; 990 13-AUG-1999; 990	10-AUG-1999; 990 11-AUG-1999; 990 12-AUG-1999; 990	R 09-AUG-1999; 990 R 09-AUG-1999; 990	R 06-AUG-1999; 990	04-AUG-1999; 990 05-AUG-1999; 990	R 03-AUG-1999; 991 R 04-AUG-1999; 991	02-AUG-1999; 991 02-AUG-1999; 991	28-JUL-1999; 991 02-AUG-1999; 991	27-JUL-1999; 991 27-JUL-1999; 991	R 26-JUL-1999; 991	R 23-JUL-1999; 991	R 22-JUL-1999; 991 R 23-JUL-1999; 991	R 22-JUL-1999; 99; 89; 80; 80; 80; 80; 80; 80; 80; 80; 80; 80	R 21-JUL-1999; 99 R 21-JUL-1999; 99	R 21-JUL-1999; 99	R 20-JUL-1999; 99	R 19-JUL-1999; 99 R 20-JUL-1999; 99	R 19-JUL-1999; 99 R 19-JUL-1999; 99 R 19-JUL-1999; 99	R 19-JUL-1999; 99
,	R 24-SEP-1999; 990 R 28-SEP-1999; 990 R 29-SEP-1999; 990 R 04-OCT-1999; 990 R 05-OCT-1999; 990 R 06-OCT-1999; 990 R 07-OCT-1999; 990 R 08-OCT-1999; 990 R 12-OCT-1999; 990	20-SEP-1999; 99U 22-SEP-1999; 99U 22-SEP-1999; 99U	10-SEP-1999; 99U 13-SEP-1999; 99U 15-SEP-1999; 99U	31-AUG-1999; 99U 01-SEP-1999; 99U 07-SEP-1999; 99U	27-AUG-1999; 990 27-AUG-1999; 990 30-AUG-1999; 990	26-AUG-1999; 99U 27-AUG-1999; 99U	23-AUG-1999; 99U 25-AUG-1999; 99U	20-AUG-1999; 990 20-AUG-1999; 990 23-AUG-1999: 990	18-AUG-1999; 990 20-AUG-1999; 990	16-AUG-1999; 990 17-AUG-1999; 990	13-AUG-1999; 990 13-AUG-1999; 990	10-AUG-1999; 990 11-AUG-1999; 990 12-AUG-1999; 990	R 09-AUG-1999; 990 R 09-AUG-1999; 990	R 06-AUG-1999; 990	04-AUG-1999; 990 05-AUG-1999; 990	R 03-AUG-1999; 991 R 04-AUG-1999; 991	02-AUG-1999; 991 02-AUG-1999; 991	28-JUL-1999; 991 02-AUG-1999; 991	27-JUL-1999; 991 27-JUL-1999; 991	R 26-JUL-1999; 991	R 23-JUL-1999; 991	R 22-JUL-1999; 991 R 23-JUL-1999; 991	R 22-JUL-1999; 99; 89; 80; 80; 80; 80; 80; 80; 80; 80; 80; 80	R 21-JUL-1999; 99 R 21-JUL-1999; 99	R 21-JUL-1999; 99	R 20-JUL-1999; 99	R 19-JUL-1999; 99 R 20-JUL-1999; 99	R 19-JUL-1999; 99 R 19-JUL-1999; 99 R 19-JUL-1999; 99	R 19-JUL-1999; 99
,	R 24-SEP-1999; 990 R 28-SEP-1999; 990 R 29-SEP-1999; 990 R 04-OCT-1999; 990 R 05-OCT-1999; 990 R 06-OCT-1999; 990 R 07-OCT-1999; 990 R 08-OCT-1999; 990 R 12-OCT-1999; 990	20-SEP-1999; 99U 22-SEP-1999; 99U 22-SEP-1999; 99U	10-SEP-1999; 99U 13-SEP-1999; 99U 15-SEP-1999; 99U	31-AUG-1999; 99U 01-SEP-1999; 99U 07-SEP-1999; 99U	27-AUG-1999; 990 27-AUG-1999; 990 30-AUG-1999; 990	26-AUG-1999; 99U 27-AUG-1999; 99U	23-AUG-1999; 99U 25-AUG-1999; 99U	20-AUG-1999; 990 20-AUG-1999; 990 23-AUG-1999: 990	18-AUG-1999; 990 20-AUG-1999; 990	16-AUG-1999; 990 17-AUG-1999; 990	13-AUG-1999; 990 13-AUG-1999; 990	10-AUG-1999; 990 11-AUG-1999; 990 12-AUG-1999; 990	R 09-AUG-1999; 990 R 09-AUG-1999; 990	R 06-AUG-1999; 990	04-AUG-1999; 990 05-AUG-1999; 990	R 03-AUG-1999; 991 R 04-AUG-1999; 991	02-AUG-1999; 991 02-AUG-1999; 991	28-JUL-1999; 991 02-AUG-1999; 991	27-JUL-1999; 991 27-JUL-1999; 991	R 26-JUL-1999; 991	R 23-JUL-1999; 991	R 22-JUL-1999; 991 R 23-JUL-1999; 991	R 22-JUL-1999; 99; 89; 80; 80; 80; 80; 80; 80; 80; 80; 80; 80	R 21-JUL-1999; 99 R 21-JUL-1999; 99	R 21-JUL-1999; 99	R 20-JUL-1999; 99	R 19-JUL-1999; 99 R 20-JUL-1999; 99	R 19-JUL-1999; 99 R 19-JUL-1999; 99 R 19-JUL-1999; 99	R 19-JUL-1999; 99

1859 CATTGGGAAGTCATATGAAACTCGTCCATGGGATTTAACAGGACAATTTATCGGCTAACA 1918	
936	
Y 1799 CATTGATTACTTTCCAGAGTACCAAACAGAAGATGGAACTGTAAGCGATAAACGAAGTAT 1858	9 TCAAAGATTAGACTCTTGAGGAGTATGGCAATAGAGAATGAGACAATGCAGGTTTAACTT 7
878	
y 1739 TCAGGAGCTGCTAAGGGATTTCCTGTTCAATGGGGTGGATGAGTTAGGCACAAAAACATT 1798	Qy 659 TATAGTAGCATGACAGGACTAGATGGTAAGACCGGAACTTCAAATGCTTGCT
8/8	Db 290AG 291
1679 CCCATTAGTGTCCCCATTATTAATTAGCTTGTGAAGATGTTGAAAATGATTTGAACAAAA	QY 599 GCTTATATAAGTAAAAGTTCAGATTTTGTTTTTCTAATCACGAAACTGTTTCAGGAAAAG 658
030 PAKATAPITITITANANANITAPINAPIANACANANACAN	Db 290 289
1619 GACATGGTCTTCTTAAAAGATTAGTAGGTGAAGCAAAGGCAAAGGTATAAAAGATTTGAT	Qy 539 TGGGTAAATTGAGTTGTCATTAGGAACCAAACAATAACTTTACTGTTATAGACT 598
827AGGATCCTG	Db 290 289 Db
1559 GAACAGACACTGTATCTGTATTGTTACAATGGATATTGATTTGGTGTTTTGCAGGATCCTG	GTTTCTTGCTGTGAATTT
804	
Y 1499 GTACCTGACATGGCGAGCACAAAAGGTGATTTCATTTCCTTTTGTGTAATTTGCATGTTT 1558	419 GCTTTAGAAGAAACCAGGAAAAGGATCGTTCTTGAACCTTCACATCTCCAGGTATATGCA 4
744 CCAAGTGAGGGAGGAGGAGCCATCTCATGTGAGAGCCAATTGTGAAGCACAACACAA 803	QY 557 MAKAMAMAMITUTIAUTIAMOTUTUTUTUTUTUTUTUTUTUTUTUTUTUTUTUTUTUTU
1439	0
721	
1379 TGGAAACTTTGACTGAGAATCTATCATCTTCCTA	61 CITGITGTAATGGCITTAICAATGGAGTTTGGGTTTCAATTGGGTCATGCTTCAAGGCA 1
698 TCTCTGCGTTTCTAGAGTACTAT	239 CTTGTTGTAATGGCTTTATCAATGGAGTTTTGGGTTTTCAATTGGGTCATGCTTCAAGGCA 2
1319	I 60
y 1259 TCTCGCCTTTTGGTGATGTGGACTAGGTTTTCGTCTAGCAAAGAAAACATAAGGCTTTTGT 1518 b 638 TCTCGCCTTTGGTGATGTGGACTAGGTTTTCGTCTAGCAAAGAAAAACATAAGGCTTTGT 697	180 ATGAAGAAGAATTGAAGAAGATGTCCGAAGGAAGAGACCTTTGG-TTTCAGTTTGTGAGT 2
590AGACTTTCCCATGGGGAAGGGAAATTGACTGGTGAATCCATAAAGTTTT	t Local Similarity 65.2%; Pred. No. 1.4e-128; Ches 1293; Conservative 0; Mismatches 3; Indels 686; Gaps 8;
Y .1199 AGATTTATTTGCAGACTTTCCCATGGGGAGGGAAATTGACTGGTGAATCCATAAAGTTTT 1258	Query Match 24.3%; Score 525.2; DB
590 589	28-OCT-1999; 99US-016 29-OCT-1999; 99US-016
1139 ATACACCAAATTACTCAATTGCAAGTAAACCTAATGCTGAGGTGTAAATGACTGATCTTG 1198	28-OCT-1999; 99US-016
544 GACAAGTATTATAACAAGATAATGTCCATATATCACAAATATGCTG 589	26-OCT-1999; 99US-016
1	25-OCT-1999; 99US-016
6 498	25-0CT-1999; 99US-016
. 1019	22-OCT-1999; 99US-016
6 498 497	21-OCT-1999; 99US-016
959 CTAGTTATGCTGGAGTTATCAGGTCTGTATTGTCCAAACTGATGTTCAATATTTTACTGT 1018	21-OCT-1999; 99US-016 21-OCT-1999; 99US-016
450 ATTCTGTGCTAACTTTTTCACATCTACCAACGTTAACATAGTTGTATT 497	21-OCT-1999; 99US-016 21-OCT-1999; 99US-016
899	-OCT-1999; 99US-016
6 401AGGTCTTTGACTTTGCGGGTTTCATGGAGCCTGAGTATGATACTCCCAT 449	14-OCT-1999; 99US-015
839	14-0CT-1999; 99US-015
6 401 400	13-OCT-1999; 99US-015
779 CAGCAGTACAAACTGATTGCTTTAGTCCCATTTCCTTACTTTCAATTGATTG	13-OCT-1999; 99US-015

```
RESULT 3
AAH48024/c
ID AAH480
XX AAH480
XX Intern
XX Intern
XX Intern
XX Intern
XX W02001
XX W02001
XX U02001
XX U02001
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INTERN
XX INT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               δã
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Db
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Вþ
                                                                The present invention relates to methods for the preparation and use of internal controls for nucleic acid amplification assays. The internal controls comprise a synthetic nucleic acid made by non-recombinant techniques. The internal controls are useful for detecting nucleic acids in a sample such as blood, spinal fluid, semen, saliva, tears, cell culture fluid, recombinant cells, animal tissue or plant tissue, by a quantitative PCR assay, by adding the internal control to the sample products. The internal controls help in performing the nucleic acid amplification assay guickly, and inexpensively without sacrificing assay specificity or sensitivity. The present sequence is one such internal control, which was used in an example to illustrate the present
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Internal standards useful for nucleic acid comprises a synthetic nucleic acid made by
                                                                                                                                                                                                                                                                                                                                                                                                  Example 1; Page
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               WPI; 2001-408658/43
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Zimmermann K,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  20-DEC-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              WO200146463-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Parvovirus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (BAXT ) BAXTER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 22-DEC-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   28-JUN-2001.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Internal control;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Internal control B19c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            18-SEP-2001
                                                          invention.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAH48024;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAH48024 standard; DNA; 14041
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1296
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1236
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2099
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1116
     sequence differs from
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ATGAGAATCCTCGAGTATGATATGATTTTAATGAAATGTATTCGTCTCTACCTAATCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GATTGTTTGAGTTACCATGCATGGTAGTTTTACAAGTGTAGCTCTCAGCCCTTCATCAAA 2098
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GAAGTAGGAATAAGAAAGAGCAGCATGAGGAGTCTCTCAGGTCTATCTGCATTTCAAGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GAAGTAGGAATAAGAAAGAGCAGCATGAGGAGTCTCTCAGGTCTATCTGCATTTCAAGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ATGATATATGTGAACAAGTCAGATTTCAGAGTCATCAACACAAGAGGACGTGAACTTAGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ATGATATATGTGAACAAGTCAGATTTCAGAGTCATCAACACAAGAGGACGTGAACTTAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2000WO-EP12996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ą
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Turecek
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 99AT-0002170
                                                                                                                                                                                                                                                                                                                                                                                                  22-27;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SS
                                                                                                                                                                                                                                                                                                                                                                                                30pp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ٩,
     is the SEQ
the SEQ ID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Schwarz H,
                                                                                                                                                                                                                                                                                                                                                                                                English.
) ID 8 shown
) 8 shown on
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Rieger
                                                                                                                                                                                                                                                                                                                                                                                                                                                           amplification assays,
non-recombinant techniques
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Z
in the s
sequence
                         listing
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1295
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2158
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1235
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2038
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1115
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1978
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1055
```

```
Ωy
 밁
                       Ş
                                                     В
                                                                                                               밁
                                                                                                                                       Qy
                                                                                                                                                                       밁
                                                                                                                                                                                               QΥ
                                                                                                                                                                                                                              뮹
                                                                                                                                                                                                                                                       Ş
                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                             Q
                                                                                                                                                                                                                                                                                                                                                                   γQ
                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                          Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   δõ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  뭥
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                VQ.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SSXC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              disclosure (see AAH48038).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence 14041 BP;
6505
                                                     6565
                                                                                                               6625
                                                                                                                                                                       6685
                                                                                                                                                                                                                              6745
                                                                                                                                                                                                                                                                                     6805
                                                                                                                                                                                                                                                                                                                                           6865
                                                                                                                                                                                                                                                                                                                                                                                                  6925
                                                                                                                                                                                                                                                                                                                                                                                                                                                         6985
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         7105
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               7045
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 7165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      7225
                         797
                                                                                  737
                                                                                                                                          677
                                                                                                                                                                                                   617
                                                                                                                                                                                                                                                         557
                                                                                                                                                                                                                                                                                                                497
                                                                                                                                                                                                                                                                                                                                                                      437
                                                                                                                                                                                                                                                                                                                                                                                                                               377
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             257
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    197
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            137
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              120;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   77
                         GCTTTA 802
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Similarity
                                                                                                                             CTAGATGGTAAGACCGAACTTCAAATGCTTGCTTTAAATCTTCAAAGATTAGACTCTTG
                                                                                                                                                                    YHAGTYASTWTNHBAAYYGAHAGVSNDAYWTNHSANKTHATGHNDADDAWHARTNSTWTN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           YTASADCNNTANGKBTAATNAHYYTADAYSKTSTNHBAAHAGTYADASATKTSVDASNAH
ACNNTA 6500
                                                    STKYHAGTYASTWTNHVBYTTNHNASGNSRYTANKKGDAHNTSGNSYKYHYTWYBAGSYD
                                                                                                                                                                                               TCAGATTTTGTTTTTCTAATCACGAAACTGTTTCAGGAAAAGTATAGTAGCATGACAGGA 676
                                                                                                                                                                                                                           YYNAHHTNYHGYKTSDADAWSAGVSRDATDAYDGSKRNNTNTKYSYNHSTKSTHATYAGK
                                                                                                                                                                                                                                                                                 ATRTNSTKSTDAAHHHTYWGBAAYANGTNYANHHNTYASCNSDASGRATKYTNAGTYADA
                                                                               AGGAGTATGGCAATAGAGAATGAGACAATGCAGGTTTAACTTCAGCAGTACAAACTGATT
                                                                                                            HDAHNTYSDASNAGYASNDACNWRNTKYCNHDNCTAMHVNCTDADAWSYBVCNNTANGKT
                                                                                                                                                                                                                                                      TTGTCATTAGGAACCAAACAAATAACTTTACTGTTATAGACTGCTTATATAAGTAAAAGT
                                                                                                                                                                                                                                                                                                            AGTGGGAGGATTATATTTCTCATTGTTTCTTGCTGAATTTTGGGTAAATTGATTTGAG
                                                                                                                                                                                                                                                                                                                                        RNGATSYDYHASCHYWDACNNKKRATKYTSTASGSNSTASKSATSRHYGYGAHAGVSYWS
                                                                                                                                                                                                                                                                                                                                                                   AAAAGGATCGTTCTTGAACCTTCACATCTCCAGGTATATGCAATTACATTTCGTTAGTGT
                                                                                                                                                                                                                                                                                                                                                                                              KRNDARNTKYCKDNNTKDGYMSTNAYKCHNTYAHNNGCKKKDGDSYAKKCNNTANGYVSS
                                                                                                                                                                                                                                                                                                                                                                                                                         CTTAGAGTCTCTGCTGTGTCGTATAAGGAATTCGCAGAGTCTGCTTTAGAAGAAACCAGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                      HNANAGTYNTDGSTYKRYGARAGYHHAGVSSTWATSRSDAHNTGATNKYHATBAGTNSTW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TCAATGGAGTTTGGGTTTTCAATTGGGTCATGCTTCAAGGCACCAAACCCACCTGTTCTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TYKYBAGSYDASYKYDGTKHNTANHDGTKYYAGTNTKDARVHSYVBAGSYDANNCTKATA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TADAAHNTSKTSVDAAYHGYNAGTYADAARHTYTSKTSBAAAHHHTYWSYANGTNYANSY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TCTCTTTTATAGATAAAGAATCTTGCTTTTTCAGTTTTCAGTATGAAGAAGAATTGAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ANGTNYANDAHNTSYKYTSGNSDAYGAYYSVANAGTYHATGHNDAAHHHTYWRDASATSR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ATGTTGAAATTCATTGTCGTTGCCAATTGCGTTTGTCTCACTGAAAACTGTGAAAATTTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AGAGTGTCCGAGGAAGGAGCCTTTGGTTTCAGTTTGTGAGTCTTGTTAATGGCTTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2151 A; 1354 C;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2.4%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              239;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Score 52; DB 22;
Pred. No. 0.0054;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   466
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  G;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2218
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      22;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            367;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  <del>,</del>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length 14041;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                7852 other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                           6566
                                                    6506
                                                                                                                                                                    6626
                                                                                                                                                                                                                           6686
                                                                                                                                                                                                                                                                                 6746
                                                                                                                                                                                                                                                    616
                                                                                                                                                                                                                                                                                                                                      6806
                                                                                                                                                                                                                                                                                                             556
                                                                                                                                                                                                                                                                                                                                                                                               6866
                                                                                                                                                                                                                                                                                                                                                                                                                                                      6926
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     7046
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              7106
                                                                                                                                                                                                                                                                                                                                                                                                                         436
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         316
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 256
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                136
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          196
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0
```

```
RESULT 4
ABL33672
ID ABL3
XX
AC ABL3
AC ABL3
XX
DT 26-1
XX
XX
Huma
XX
KW Huma
KW ant:
                         Human immune system associated
                                             26-MAR-2002
                                                              ABL33672;
                                                                               ABL33672 standard;
                                           (first
                                                                              DNA; 12142
                                          entry;
                                                                               ВP
                          gene SEQ
```

Human; immune system disease; antiarteriosclerotic; antiana

antianaemic;

cytosine methylation; antiasthmatic;

Ħ NO:

1645

cytostatic; nootropic;

neuroprotective;

anti-HIV;

```
밁
                                                                        Qy
                                                                                                        밁
                                                                                                                                                           밁
                                                                                                                                                                                     Ş
                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                     δĀ
                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                          Ş
                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                    Matches
                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local S
                                                                                                                                                                                                                                                                                                                                                                                                                                                      The present invention provides a number of human immune system associated genes which are modified by the methylation of cytosines. The sequences can be used in the diagnosis and treatment of immune system disorders, including eye diseases such as retinopathy, neovascular glaucoma and macular degeneration, arteriosclerosis, anaemia, cancer, acute myeloid leukaemia, Alzheimer's disease, AIDS, eppilepsy, neurofibromatosis, rheumatoid arthritis, psoriasis and inflammatory/ulcerative bowel diseases. The present sequence is a gene of the invention.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Homo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  gene; ds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            antirheumatic; antiarthritic; antidiabetic; antipsoriatic; antiinflammatory; cancer; eye disease; arteriosclerosis; anaemia; acute myeloid leukaemia, Alzheimer's disease; AIDS; epilepsy; neurofibromatosis; rheumatoid arthritis; psoriasis; bowel disease
                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 12142 BP; 3009 A; 174 C; 3311 G;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Claim 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               cytosine methylation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Nucleic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      WPI;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (EPIG-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  30-JUN-2000;
01-SEP-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        02-JUL-2001; 2001WO-EP07537
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   03-JAN-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              WO200200928-A2
                                                                                                          10484
                                                                                                                                                                                                                                                                        10306
                                                                                                                                                              10426
                                                                                                                                                                                                                                                                                                                           10246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          leic acid comprising frag diagnosis and treatment
                                                                                                                                                                                                                                             625
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        sapiens.
                                                                                                                                                                                                                                                                                                                                                                            181;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2002-130909/17
                                                                                                                                                                                                                                                                                                                                                                                           Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       EPIGENOMICS
                                                                                                                                                                                                                                                                    GATTATATTTCTCATTGTTTCTTGCTGGTGAAATTTGGGTAAATTGATTTGAGTTGTCATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQ ID NO 1645;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Piepenbrock
TTTGTTTTAGGAATTTTAAATGT
                         CGGGTTTCATGGAGCCTGAGTAT
                                                                  CCCATTTCCTTACTTTCAATTGATTGATTGTTTGTATCTTCGCTTAGGTCTTTGACTTTG
                                                                                                        AAGGTGGAAATTTAATGTAAATAATTTTAAATGTTTAT--ATTAAATAGTTGGGTTTATT
                                                                                                                                                                                                               ATTTTTTTGAGTTTAAGTTAAGTAGAAGAAAATTTGTTGGAGAATTATAGAGGAAGAGAA
                                                                                                                                                                                                                                         TGTTTTTCTAATCACGAAACTGTTTCAGGAAAAGTATAGTAGCATGACAGGACTAGATGG
                                                                                                                                                                                                                                                                                               AGGAACCAAACAAATAACTTTACTGTTATAGACTGCTTATATAAGTAAAAGTTCAGATTT
                                                  GGCAATAGAGAATGAGACAATGCAGGTTTAACTTCAGCAGTACAAACTGATTGCTTTAGT
                                                                                                                                                                                      TAAGACCGAACTTCAAATGCTTGCTTTTAAATCTTCAAAGATTAGACTCTTGAGGAGTAT
                                                                                                                                                                                                                                                                                                                                                                              Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2000DE-1032529
2000DE-1043826
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ã
                                                                                                                                                                                                                                                                                                                                                                                        2.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ç
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          fragment of chemically modified ment of diseases associated with
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 32pp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Berlin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    anticonvulsant; ophthalmological;
                                                                                                                                                                                                                                                                                                                                                                            0
                                                                                                                                                                                                                                                                                                                                                                                        Score 49; DB 24;
Pred. No. 0.032;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 + Sequence Listing;
                                                                                                                                                                                                                                                                                                                                                                           Mismatches
10626
                                                                                                                                                                                                                                                                                                                                                                                                                                  5648
                                                                                                                                                                                                                                                                                                                                                                            200;
                                                                                                                                                                                                                                                                                                                                                                                                                                 Η;
                                                                                                                                                                                                                                                                                                                                                                                                   Length 12142;
                                                                                                                                                                                                                                                                                                                                                                                                                                 0 other;
                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    German
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          gene, useful
abnormal
                                                                                                                                                                                                                                                                                                                                                                           2
                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                       744
                                                                                                                                                                                                                                          684
                                                                                                                                                                                                                                                                                               624
                                                    10603
                                                                             864
                                                                                                        10543
                                                                                                                                804
                                                                                                                                                            10483
                                                                                                                                                                                                                 10425
                                                                                                                                                                                                                                                                     10365
                                                                                                                                                                                                                                                                                                                        10305
                                                                                                                                                                                                                                                                                                                                                  564
```

Ş

밁 Ş

Best Local Similarity Matches 243; Conserv

Conservative

0;

2.2%;

Score 46.8; D Pred. No. 0.09 0; Mismatches

.098; DВ 327; 24;

Indels

Gaps

7441; 0

91

TGTCGTTGCCAATTGCGTTTGTCTCACTGAAACTGTGAAAATTTTATCTCTTTTATAGAT

4925 150 0 Query Match

Sequence

7441

BP;

2098 A; 66 C; 1948 G; 3329 T; 0 other;

Š

```
RESULT 5
ABK40057
ID ABK4
XX ABK4
XX ABK4
XX ABK4
XX ABK4
XX ABK4
XX ABK4
XX ABK4
XX ABK4
XX ABK4
XX ABK4
XX ABK4
XX ABK4
XX ABK4
XX ABK4
XX ABK4
XX ABK4
XX ABK4
XX ABK4
XX Huma
XX UGT8
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX ABK4
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX ABK4
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX Huma
XX H
                                                                                     The invention relates to a nucleic acid comprising a sequence at CC least 18 bases in length of a segment of the chemically pretreated DNA CC of genes associated with pharmacogenomics according to one of the Cx sequences of the genes ALDH6 (NM_000693), CYP11A (NM_000781), CYP11B1 (NM_000497), CYP3A3 (NM_0002538), TXNRD1 (NM_00330), DPYD (NM_000336), CC (NM_001997), OCLN (NM_002538), TXNRD1 (NM_00330), UGT8 (NM_001989), CC (NM_01999), NM_019901, NM_019902, NM_01986), CC (NM_01989) and their complementary sequences, or a sequence (S1) chosen CC from 87 sequences and their complements. The chemical pretreatment to convert cytosines (but not methyl cytosines) into uracils. Also included are an oligomer (II) in particular an CC oligonuclectide or a peptide nucleic acid (PNA)-oligomer, comprising in CC oligonuclectide or a peptide nucleic acid (PNA)-oligomer, comprising in CC oligonuclectides to or is identical to a chemically pretreated DNA of CC ques associated with pharmacogenomics and their complements, arranged in CC case at least one base sequence having a length of 9 nucleotides (CC (CpG) and/or detecting SNPs (single nucleotide polymorphisms) of the 87 sequences. The oligomers may also be used as PCR primers. CC The set of 87 nucleic acids and their complements is useful for diagnosis capter set of 87 nucleic acids and their complements sueful for diagnosis conditions in the printed specification, but was obtained in electronic for the printed specification, but was obtained in electronic format directly from WIPO at
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 WPI;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Human; ds; bisulphite treatment; CpG; DNA methylation; cancer; tucytostatic; ALDH6; CYP11A; CYP11B1; CYP3A3; DPYD; EPHX2; OCLN; TYUGT8; MRP; pharmacogenomics; SNP; single nucleotide polymorphism.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Claim 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             with
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        01ek
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       30-JUN-2000;
01-SEP-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           29-JUN-2001;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              10-JAN-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Human
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ABK40057;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ABK40057
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (EPIG-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  WO200202806-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Homo
                                                               ftp.wipo.int/pub/published_pct_sequences
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   nucleic acid, oligonucleotides and peptide nucleic acid-oligomers, ful for detecting cytosine methylation state of genes associated h pharmacogenomics and for therapy of diseases e.g. cancer -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2002-154757/20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 sapiens.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     chemically pretreated
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EPIGENOMICS AG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               standard; DNA; 7441
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Piepenbrock
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2001WO-EP07470
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ID No 139;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2000DE-1032529
2000DE-1043826
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ç
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          24pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Berlin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 gene sequence #70
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ВP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     strand
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ۲
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TXNRD1;
                                                                                                                                                                                                                                                                          diagnosis
```

```
RESULT 6
AAS63344
ID AAS6
XX AAS6
AC AAS6
AC AAS6
XX Huma
DT 29-J
XX Chem
XX Huma
KW Solli
KW Solli
KW Cere
KW Cere
KW Core
KW Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δõ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ρy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δδ
                                                                     Olek A,
                                                                                                                                                                                                                                            06-APR-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               solid tumour; cancer; cytosine methylation; epigenetic; eye; kidney; single nucleotide polymorphism detection; SNP; stool; urine; lung; cerebral-spinal fluid; intestine; brain; heart; prostate; breast; DUSP2; EPHX2; QDPR; SGSH; SHMT2; SLC7A2; SLC7A4; TYMS; ds.
                                                                                                                                                                       01-SEP-2000;
                                                                                                                                                                                                                                                                                        06-APR-2001; 2001WO-EP04016
                                                                                                                      (EPIG-)
                                                                                                                                                                                              30-JUN-2000;
                                                                                                                                                                                                                                                                                                                                              18-OCT-2001
                                                                                                                                                                                                                                                                                                                                                                                            WO200176451-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                        Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Human; cytostatic; anti-tumour; metabolism; metabolic disease;
solid tumour; cancer; cytosine methylation; epigenetic; eve. k
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Chemically pretreated metabolism associated gene #39
                                                                                                                                                                                                                   07-APR-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        29-JAN-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAS63344;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AAS63344 standard; DNA; 7479
                         2002-010834/01
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             5406
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       5346
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    5286
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 5226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   5166
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  5106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              5046
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              4986
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             4926
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    451
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   391
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               271
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            211
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           151
                                                                                                                   EPIGENOMICS
                                                                  Piepenbrock
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CAAACAAATAACTTTACTGTTATAGACTGCTTATATAAGTAAAAGTTCAGATTTTGTTTT 630
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TTTGAATAAGAAATTTATGATGAAATTATA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TCTAATCACGAAACTGTTTCAGGAAAAGTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AATTTTCGATAGATGGATATATGGTGTTTTAAAAAAATATATTTTGGTTATATTTTTATA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ATTTCTCATTGTTTCTTGCTGTGAATTTTGGGTAAATTGATTTGAGTTGTCATTAGGAAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TGAACCTTCACATCTCCAGGTATATGCAATTACATTTCGTTAGTGTAGTGGGAGGATTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GGTGATTGTGTATATTTTCGGTTTTTATTTTTGTTAATGTTAGTAAATTATTTGTTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TGTGTCGTATAAGGAATTCGCAGAGTCTGCTTTAGAAGAAACCAGGAAAAGGATCGTTCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ATATAGTTATTGGATAAATATGAAGATAATTTTGGAAGAGTTTGTTTAGAGGGGTTATGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ATAGTTTAGTTTATTTTAGTTTTGGAAGTTGTGGAAAGGTGTTAGTGTGTTTATAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GTTTTCAATTGGGTCATGCTTCAAGGCACCAAACCCACCTGTTCTAATCTCTGCAAGCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AAAGAATCTTGCTTTTTTCAGTTTTCAGTATGAAGAAGTATTGAAGAGAGTGTCCGAGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AGGAGACCTTTGGTTTCAGTTTGTGAGTCTTGTTGTAATGGCTTTATCAATGGAGTTTGG
                                                                                                                                                               ; 2000DE-1019058.
; 2000DE-1019173.
; 2000DE-1032529.
; 2000DE-1043826.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (first entry)
                                                                                                                   Ą
                                                                  G
                                                                  Berlin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ВP
                                                                  ~
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   5435
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 660
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          5405
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     570
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    5285
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      5225
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       450
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     5165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     510
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  5105
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  330
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   390
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               270
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              210
```

```
PT disease, solid tumour and cancers, comprises segment of chemically modified genomic sequences of genes associated with metabolic prodified genomic sequences of genes associated with metabolism .

**XX**

*CC laim 1; Page 107-109; 143pp; English.

*XX**

*CC The invention relates to a nucleic acid (I) comprising a sequence at comprise (MM_00420).

*CC Coppe (NM_000320), SGSH (NM_004173) and TYMS (NM_004412), SEC7A2 (NM_00340).

*CC COPPE (NM_000320), SGSH (NM_004173) and TYMS (NM_0010412), SEC7A2 (NM_001379).

*CC (NM_00320), SGSH (NM_004173) and TYMS (NM_001071) (all undefined). (I) are useful for diagnosis and therapy of metabolic disease, solid tumours and cancers; as primer oligonuclectides for the camplification of DNA sequences, for detecting the cytosine methylation contain and/or single nuclectide polymorphisms (SNPs) in a chemically treated DNA of genes associated with metabolism. An array of (I) is useful for ascertaining genetic and/or epigenetic parameters for the specific diseases by analysing cytosine methylations. The method involves chanically treating genomic DNA sample by asolution of bishiphite or disulphite such that cytosine bases which are unmethylated at the 5th-position are converted to uracil or another base for equival to a secretal sing, for eq. cell lines, bloogies, blood, sputum, complishing fragments of the chemically pretreated genomic DNA, The genomic DNA to comprising, for eq. cell lines, bloogies, blood, sputum, considered for eq. cell lines, bloogies, blood, sputum, considered for eq. cell lines, bloogies, blood, sputum, considered for existing and sequences further required for their regulations, point metabolism and sequences further required for their regulations and contain modifications of DNA bases of genes associated with metabolism and related primers of the hoverlates with DNA methylation.

**CC Consideration of hand the primers of the hoverlates with DNA methylation.**

*CC Considerate of the invention.**

*CC Considerate of the invention.**

*CC Considerate of the
```

Query Match Best Local Sim Matches 243; Similarity Conservative 2111 A; 68 C; 1962 G; 3338 T; 0 other; 2.2%; 0; Score 46.8; Pred. No. 0. Mismatches .098; DB 24; 327; Length Indels 7479; 0; Gaps

Qy Ъ Qy 밁 Qy QУ B В QV Вþ δÃ Qy DЬ 5264 5144 5084 5024 4964 391 271 211 151 91 GCTGATTGTGTTGATATTTTCGGTTTTTATTTTTGTTAATGTTAGTAAATTATTTGTTAT TGTGTCGTATAAGGAATTCGCAGAGTCTGCTTTAGAAGAAACCAGGAAAAGGATCGTTCT ATAGTTTAGTTGTTATTTTAGTTTTGGAAGTTGTGGAAAGGTGTTAGTGTGGTTTATAGA TGAACCTTCACATCTCCAGGTATATGCAATTACATTTCGTTAGTGTAGTGGGAGGATTAT ATATAGTTATTGGATAAATATGAAGATAATTTTGGAAGAGTTTGTTTAGAGGGGGTTATGA GTTTTCAATTGGGTCATGCTTCAAGGCACCAAACCCACCTGTTCTAATCTCTGCAAGCCC AGGAGACCTTTGGTTTCAGTTTGTGAGTCTTGTTGTAATGGCTTTATCAATGGAGTTTGG AAAGAATCTTGCTTTTTTCAGTTTTCAGTATGAAGAAGATTGAAGAGAGTGTCCGAGGA TGTCGTTGCCAATTGCGTTTGTCTCACTGAAACTGTGAAAATTTTATCTCTTTTATAGAT 5083 5263 450 5203 5143 330 5023 390 150 270 210

```
RESULT 7
ABL32655
ID ABL3
XX ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC ABL3
AC A
  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           β Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ş
                                          Ş
                                                                                                                      Query Match
Best Local
                                                                                                      Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         WPI;
                                                                                                                                                                                                                                                                                                                                                    The present invention provides a number of human immune system associated genes which are modified by the methylation of cytosines. The sequences can be used in the diagnosis and treatment of immune system disorders, including eye diseases such as retinopathy, neovascular glaucoma and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              01ek
                                                                                                                                                                                                   Sequence 17211 BP; 5518 A;
                                                                                                                                                                                                                                                macular degeneration, arteriosclerosis, anaemia, cancer, acute myeloid leukemia, Alzheimer's disease, AIDS, epilepsy, neurofibromatosis, rheumatoid arthritis, psoriasis and inflammatory/ulcerative bowel diseases. The present sequence is a gene of the invention.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Claim 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Nucleic acid comprising fragment of chemically modified for diagnosis and treatment of diseases associated with cytosine methylation \,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (EPIG-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             30-JUN-2000;
01-SEP-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       02-JUL-2001;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         03-JAN-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      WO200200928-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Homo sapiens.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          gene;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       neurofibromatosis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       antlinflammatory; cancer; eye disease; arteriosclerosis; anaemia;
acute myeloid leukaemia; Alzheimer's disease; AIDS; epilepsy;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              antiarteriosclerotic; antianaemic; cytostatic; nootropic;
neuroprotective; anti-HIV; anticonvulsant; ophthalmological;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Human immune system associated
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             26-MAR-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ABL32655;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ABL32655 standard; DNA; 17211
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            antirheumatic; antiarthritic; antidiabetic; antipsoriatic;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           5444
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            5384
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2002-130909/17.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            571
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                511
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ds
                                                                                                    146;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      immune system disease; cytosine methylation; antiasthmatic;
                                                                                                                            Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             EPIGENOMICS
                               TTAGAGTCTCTGCTGTGTGGAAAAGGAATTCGCAGAGTCTGCTTTAGAAGAAACCAGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQ ID NO 628;
Piepenbrock
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TTTGAATAAGAAATTTATGATGAAATTATA 5473
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CAAACAAATAACTTTACTGTTATAGACTGCTTATATAAGTAAAAGTTCAGATTTTGTTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TCTAATCACGAAACTGTTTCAGGAAAAGTA 660
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ATTTCTCATTGTTTCTTGCTGTGAATTTTGGGTAAATTGATTTGAGTTGTCATTAGGAAC
                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2000DE-1032529
2000DE-1043826
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2001WO-EP07537
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  rheumatoid arthritis; psoriasis;
                                                                                                                      2.1%;
49.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ċ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   32pp + Sequence Listing; German.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Berlin
                                                                                                                                                                                                   180 C; 3351 G;
                                                                                            Score 46.4; D
Pred. No. 0.18
0; Mismatches
                                                                                                 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ВP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ħ
                                                                                                                         DB 24;
1.18;
                                                                                                                                                                                                   8162 T;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NO:
                                                                                                 146;
                                                                                                                                                                                                   0 other;
                                                                                                 Indels
                                                                                                                                                 Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  epilepsy;
bowel dis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          gene, useful
abnormal
                                                                                                                                                   17211;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  disease;
                                                                                               2;
                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         630
  9415
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           5383
                                               437
                                                                                               1;
```

```
RESULT 8
ABL70318
밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ş
                                       The invention relates to a nucleic acid comprising a sequence of at least C18 bases of a segment of chemically pretreated DNA of genes associated with cell signalling. The activity of the modified sequences of the invention may be described as cytostatic. The object of the invention is to provide the chemically modified DNA of genes associated with cell signalling, as well as oligonuclectides and/or PNA-oligomers for detecting cytosine methylations, as well as a method which is particularly suitable for the diagnosis and/or therapy of genetic and epigenetic parameters of genes associated with cell signalling. The chemically modified DNA provided by the invention is useful for diagnosis and therapy of diseases such as solid tumours and cancer. The sequences of alven in records ABL70111-ABL7065 represent chemically pre-treated genomic DNA's of genes associated with cell signalling.

Note: The sequence data for this patent is not represented in the printed specification, but is based on sequence information supplied by the
                                                                                                                                                                                                                                                                                                                                                                                                                   WPI;
                                                                                                                                                                                                                                                                                                                 Claim 1;
                                                                                                                                                                                                                                                                                                                                            Nucleic acid, useful for diagnosis and therapy of diseases associated with cell signalling e.g. cancer, comprises chemically modified genom sequences of genes associated with cell signalling \,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Unidentified
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Cell signalling; cytosine methylation;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Chemically treated
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   01-JUL-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                  Olek
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    01-SEP-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 30-JUN-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  29-JUN-2001; 2001WO-EP07471
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  WO200202807-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ABL70318;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ABL70318
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   10-JAN-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (EPIG-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     9536
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       9476
                                                                                                                                                                                                                                                                                                                                                                                                                                                Ą,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      616
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      438
                                                                                                                                                                                                                                                                                                                                                                                                                   2002-154758/20.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EPIGENOMICS
                               Patent Office.
                                                                                                                                                                                                                                                                                                               SEQ ID NO 208; 24pp+sequence listing; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GT--GGGAGGATTATATTTCTCATTGTTTCTTGCTGTGAATTTTTGGGTAAATTGATTTGA 555
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AAAGAGTTTTTGTTTAAATGTTAATAATGGTTATATTTGGGTAAAGAATTTATGGATGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAAGGATCGTTCTTGAACCTTCACATCTCCAGGTATATGCAATTACATTTCGTTAGTGTA 497
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TAGTAATTTTATTTTTAGGATTATATTTTAATTTAAGGAAATAAATAGATGTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TATGTTATTAATAAATAAAGTAATTATTATAATATTTTTGGTATATTTGTATATTTTGATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GTTGTCATTAGGAACCAAACAAATAACTTTACTGTTATAGACTGCTTATATAAGTAAAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                  Piepenbrock
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TTCAGATTTTGTTTTTCTAATCACGAAACTGTTTCAGGAAAAGTATAGTAGCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2000DE-1032529
2000DE-1043826
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  cytostatic;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                cell signalling DNA sequence complementary to#104.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DNA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   a
a
                                                                                                                                                                                                                                                                                                                                                                                                                                           Ċ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    15224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ВP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 cell
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 signalling disease;
                                                                                                                                                                                                                                                                                                                                                               genomic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      669
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      615
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     9475
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     9595
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     9535
```

Sequence 15224 BP;

3395

۸,

417

Ç 4284

<u>ი</u> 7128

Η. 0 other;

Query Match

```
RESULT 9
ARAS61263
ID ARAS6
AC ARAS6
AC ARAS6
AX ARAS6
AX ARAS6
AX ARAS6
AX ARAS6
AX ARAS6
AX ARAS6
AX ARAS6
AX ARAS6
AX ARAS6
AX ARAS6
AX ARAS6
AX ARAS6
AX ARAS6
AX Huma
AX Immu
KW Icali
KW Icali
KW Icali
KW Icali
KW Icali
KW Icali
KW Icali
KW Icali
KW Icali
KW Icali
KW Icali
KW Icali
KW Icali
KW Icali
KW Icali
KW Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX Icali
AX I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Вþ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  몽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Matches
The invention relates to 224 nucleic acid sequences comprising at least 18 bases of a chemically pretreated gene associated with gene regulation selected from 43 known genes (or complementary sequences). The chemical pretreatment converts cytosine bases unmethylated at the 5-position to uracil or another base with hybridisation behaviour dissimilar to cytosine, to enable analysis of cytosine methylations. The DNA sequences, oligomers (or sets/arrays) and method are useful in the diagnosis of diseases (or predisposition to diseases)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       06-APR-2000;
07-APR-2000;
30-JUN-2000;
01-SEP-2000;
                                                                                                                                                                                                                                                                                       New nucleic acid sequences from chemically modified genes associated with gene regulation, useful for analysing cytosine methylations for diagnosis and therapy of diseases e.g. severe combined immunodeficiency
                                                                                                                                                                                                                                   Claim 1;
                                                                                                                                                                                                                                                                                disease
                                                                                                                                                                                                                                                                                                                                                                                                     WPI;
                                                                                                                                                                                                                                                                                                                                                                                                                                                     01ek
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          06-APR-2001; 2001WO-EP03968
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Human; Gene regulation-associated gene; severe combined immunodeficiency; cardiac damage; inflammatory response; Haemophilia; Werner syndrome;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (EPIG-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               18-OCT-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            W0200177375-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Homo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        nephrotropic;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     colorectal cancer;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              renal disease;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Human gene regulation-associated
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            29-JAN-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AAS61263;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AAS61263 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               mmunostimulant; cardiant;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                Þ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           6350
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     6290
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  6230
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         sapiens.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            6170
                                                                                                                                                                                                                                                                                                                                                                                                   2002-017470/02
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      288
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  228
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               168
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          108 TTTGTCTCACTGAAACTGTGAAAATTTTATCTCTTTTATAGATAAAGAATCTTGCTTTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          damage; inflammatory response; Haemophilia; Werner syndrome;
HDR syndrome; congenital heart defect; Saethre-Chotzen syndr
HDR syndrome; congenital heart defect; Saethre-Chotzen syndrome;
Isease; Preeclampsia; cardiac allograft vascular disease;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      99;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EPIGENOMICS
                                                                                                                                                                                                                                SEQ
                                                                                                                                                                                                                                                                                                                                                                                                                                             Piepenbrock
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TATTTAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AGTTTGTGAGTCTTGTTAATGGCTTTATCAATGGAGTTTGGGTTTTCAATTGGGTCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TGTTTTTTGAAATTTGGGTTGTTTTGGGAATTTTGGGGTAGGAATGTTTAGTTTGGGTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GCTTCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ; 2000DE-1019058.
; 2000DE-1019173.
; 2000DE-1032529.
; 2000DE-1043826.
                                                                                                                                                                                                                                IJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      gynecological;
                                                                                                                                                                                                                                No
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      6356
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      294
                                                                                                                                                                                                                         224; 26pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                thyroid cancer; oesophageal cancer; ds; tumour; ardiant; antiinflammatory; coagulant; antiasthma
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DNA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ĄG
                                                                                                                                                                                                                                                                                                                                                                                                                                                'n
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2.1%; 52.9%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   15224
                                                                                                                                                                                                                                                                                                                                                                                                                                             Berlin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              anti-tumour; immunosuppressive;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score
Pred.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ВP
                                                                                                                                                                                                                                                                                                                                                                                                                                             7,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     46.2;
No. 0.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       oligonucleotide #218
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DB
.19;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           24;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ; 88
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     antiasthmatic;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           15224;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        syndrome;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         6349
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     6289
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               6229
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      287
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                227
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0
```

```
RESULT 10
ABK31359
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   δõ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           δõ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   뫄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Matches
                                                                                                                                                                                                                   30-JUN-2000;
01-SEP-2000;
                                                                                                                                          01ek
                                                                                                                                                                               (EPIG-)
                                                                                                                                                                                                                                                                              29-JUN-2001;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            associated with gene regulation and in therapy of such diseases, by enabling analysis of the cytosine methylation patterns of such gene kits are provided. They are especially useful in diagnosis and therapy of e.g. severe combined immunodeficiency disease, cardidisorders, haemophilia, solid tumours and cancer, Werner syndrome, asthma, HDR syndrome, Saethre-Chotzen syndrome, renal disease, preclampsia, graft versus-host disease. The present sequence is a sequence included in the sequence data for this specification and jassociated with the human gene regulation-associated genes. Note: The sequence data for this patent did not form part of the reference of the sequence of the seq
                                                                                                                                                                                                                                                                                                                                                           WO200200926-A2
                                                                                                                                                                                                                                                                                                                                                                                                     Synthetic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Human; signal transduction associated gene; cytosine methylation state; CpG island; signal transduction associated disease; solid tumour; cance
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Signal transduction
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 23-APR-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ABK31359;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ABK31359 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            of the printed specification, but was obtained in electronic format directly from WIPO at
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 15224 BP;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ftp.wipo.int/pub/published_pct_sequences
                                                                                                                                      A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          6290
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        6230
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   6170
                                                                                                                                                                                                                                                                                                                                                                                                                      sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             6350 TATTTAA 6356
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  228
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              168
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       108
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   288 GCTTCAA 294
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               l Similarity
99; Conserv
                                                                                                                                                                           EPIGENOMICS
                                                                                                                                   Piepenbrock
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TGTTTTTTTGAAATTTGGTTGTTTTGGGAATTTTTGGGGTAGGAATGTTTAGTTTGGGTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TTTGTCTCACTGAAACTGTGAAAATTTTATCTCTTTTATAGATAAAGAATCTTGCTTTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GGTTTTTTATTCGAGGTTGGTTGATTTTTTTAGTGGAGTTTGGATTTTTTGGTTTTGGGTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AGTTTGTGAGTCTTGTTAATGGCTTTATCAATGGAGTTTGGGTTTTCAATTGGGTCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           cytostatic;
                                                                                                                                                                                                                 2000DE-1032529
2000DE-1043826
                                                                                                                                                                                                                                                                              2001WO-EP07472
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (first
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DNA;
                                                                                                                                                                             AG.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        3395 A; 417
                                                                                                                                      Ç
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       associated
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          15224
                                                                                                                                      Berlin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 46.2;
Pred. No. 0.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 gene modified complementary DNA #101.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ç
                                                                                                                                      7
                                                                                                                                                                                                                                                                                                                                                                                                                                                       associated ds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        4284 G;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             .19;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      7128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                24;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           88;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ή,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 15224;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      other
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       cardiac
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            and is
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             genes,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                bу
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        cancer;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  6349
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             6289
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        287
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         6229
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   227
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0
```

Oligonucleotide for diagnosis and therapy of diseases associated with signal transduction e.g. cancer, comprises chemically modified genomic sequences of genes associated with signal transduction

2002-147896/19

```
Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local S
Matches 99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        for detecting the cytosine methylation state (CpG islands) of these genes, and a method for the diagnosis and/or therapy of genetic and epigenetic parameters of genes associated with signal transduction. The genomic DNA can be obtained from cells or cellular components which contain DNA, e.g. cell lines, biopsies, blood, sputum, stool, urine, cerebral-spinal fluid, tissue embedded in paraffin such as tissue from the contain DNA can be obtained for the contain DNA, e.g. cell lines, biopsies, blood, sputum, stool, urine, cerebral-spinal fluid, tissue embedded in paraffin such as tissue from the contain DNA can be obtained for the contain DNA can be obtained from the contain DNA can be obtained to the contain DNA can be obtained from the contain DNA can be obtained from the contain DNA can be obtained from the contain DNA can be obtained from the contain DNA can be obtained from the contain DNA can be obtained from the contain DNA can be obtained from the contain DNA can be obtained from the contain DNA can be obtained from the contain DNA can be obtained from the contain DNA can be obtained from the contain DNA can be obtained from the contain DNA can be obtained from the contain DNA can be obtained from the contain DNA can be obtained from the contain DNA can be obtained from the contain DNA can be obtained from the contain DNA can be obtained from the contain DNA can be obtained from the contain DNA can be obtained from the contain DNA can be obtained from the contain DNA can be obtained from the contain DNA can be obtained from the contain DNA can be obtained from the contain DNA can be obtained from the contain DNA can be obtained from the contain DNA can be obtained from the contain DNA can be obtained from the contain DNA can be obtained from the contain DNA can be obtained from the contain DNA can be obtained from the contain DNA can be obtained from the contain DNA can be obtained from the contain DNA can be obtained from the contain DNA can be obtained from the contain DNA can be obtained from the contai
                                                                                                                                                                                                                                                                                                                                                                                                         green-truited tomato;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   their complementary sequences.

Note: The sequence data for this patent did not form part of the printed note: The sequence data for this patent did not form part of the printed note: The sequence data for this patent did not format directly from the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   eyes, intestine, kidney, brain, heart, prostate, lung, breast or liver, histologic object slides, and all their possible combinations. The sequences of the invention are useful for the diagnosis and therapy of diseases associated with signal transduction e.g. solid tumours and cancer. ABK31158-ABK31545 represent chemically pretreated genomic DNA sequences of different genes associated with signal transduction, or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       The present invention relates to chemically modified DNA sequences or signal transduction associated genes. The DNA sequences are chemical modified using a solution of bisulestic, hydrogen sulphite or disulphite, highly a solution of bisulestic and/or PNA oligomers disulphite. Also disclosed are oligonucleotides and/or PNA oligomers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Claim 1;
                                                                                                                                                                                                                                                                                                                                                                                                         Invertase isoenzyme; apoplast; brix value; monosaccharide; sugar; fruit;
green-fruited tomato; eLin7; ds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Lycopersicon pennellii eLin7 invertase isoenzyme genomic DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence 15224 BP; 3395 A; 417 C; 4284 G; 7128 T; 0 other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                specification, but was obtained in European Patent Office.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 6350
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      6170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       6290
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             6230
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       108
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      288
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           228
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 168
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           99;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TATTTAA 6356
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GCTTCAA 294
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TGTTTTTTGAAATTTGGTTGTTTTGGGAATTTTGGGGTAGGAATGTTTAGTTTGGGTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TTTTTCGGAAGGAGTTTAGTTATAGAATTTTTTTTTTTCGGATAATAATTTTAGATTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AGTTTGTGAGTCTTGTTATGGCTTTATCAATGGAGTTTGGGTTTTCAATTGGGTCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TTTGTCTCACTGAAACTGTGAAAATTTTATCTCTTTTATAGATAAAGAATCTTGCTTTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                                                                                                                                     pennellii.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 IJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (first entry)
                                                                               /number- 1
282..537
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ö
                                                                                                                                                                                /product= "eLin7 invertase isoenzyme"
/note= "The CDS is interrupted by 5 introns"
                                 'number 1
                                                            /*tag=
                                                                                                                                    /*tag= b
                                                                                                                                                                                                                                               /*tag=
                                                                                                                                                                                                                                                                                              Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DNA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              202;
                                                         ဂ
                                                                                                                                                                                                                                            ø
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             3532 BP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              24pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score 46.2; DB Pred. No. 0.19;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DΒ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   88;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          24;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 15224;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 chemically
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               o
f
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    6349
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      287
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          6289
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   6229
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            227
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    167
                                 덩
```

```
δõ
                                                                            Query Match
Best Local S
Matches 102
                                                                                               Lycopersicon pennellii fruit, and an N terminal amino acid sequence serving for secretion into an apoplast. The invention also relates to a novel regulatory element unique to L. pennellii which is also associated with high brix trait. The polynucleotides of the invention are useful for increasing the sugar content in e.g. fruits, roots and leaves of plants expressing them. The regulatory element when integrat in a site specific manner, into a solanaceae plant genome, can substantially increase the sugar content in tissues e.g. fruits. The present sequence is Lycopersicon pennellii genomic DNA encoding eLin7 invertase isoenzyme.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   exon
                                                                                                                                                                                                                genomic, complementary or composite polynucleotide sequences encoding novel apoplastic invertase isoenzymes associated with high brix value
                                                                                                                                                                                                                                                             Claim
                                                                                                                                                                                                                                                                                            Nucleic acid comprising a genomic, complementary or composite sequence encoding a polypeptide having an invertase activity in an apoplastic environment, useful for increasing the monosaccharide content of plants
                                                                                                                                                                                                                                                                                                                                            WPI; 2001-418359/44.
P-PSDB; AAE04416.
                                                                                                                                                                                                                                                                                                                                                                                                                           04-JAN-2000; 2000US-0477375
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             exon
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  exon
                                                                           Sequence 3532 BP;
                                                                                                                                                                                                                                     The present invention relates to nucleic acids comprising
                                                                                                                                                                                                                                                                                                                                                                              Zamir D, Pleban T,
                                                                                                                                                                                                                                                                                                                                                                                                                                                 02-JAN-2001; 2001WO-IL00008
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       12-JUL-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            WO200149826-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          exon
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               intron
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     intron
                                                                                                                                                                                                                                                                                                                                                                                                   (YISS ) YISSUM RES DEV CO HEBREW UNIV JERUSALEM.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           intron
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   intron
512 TTTCTCATTGTTTCTTGCTGGAATTTTGGGTAAATTGATTTGAGTTGTCATTAGGAACC
                                102;
                                                                                                                                                                                                                                                            3; Page 93; 99pp; English.
                                         Similarity
                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /number- 3
2627
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /number=
547..879
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /number= 5
3142..3532
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /number= 4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /rcag= j
/number= 5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /number= :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         3067..3141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2970..3066
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2872..2969
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2627 . . 287
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /*tag=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /*tag=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ′*tag= k
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          'number=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    *tag=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 899..2626
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           'number-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          *tag=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /*tag=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   *tag=
                                                                           1184 A; 553
                                        2.1%;
52.0%;
                                                                                                                                                                                                                                                                                                                                                                              Fridman E;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ф
                            Score 45.6; DB Pred. No. 0.15; 0; Mismatches
                               0:
                                                                           Ç
                                                                           607 G;
                                                                           1188
                                                    DB
                                                   22;
                                                                           Τ;
                               94;
                                                                            0
                               Indels
                                                    Length
                                                                            other;
                                                    3532;
                               0;
                                                                                                                                              integrated,
                             Gaps
         571
                                                                                                                                                                                                                 in
```

2617 TTTTTCATTAAACACTTTCATCGTCGAGTGATATCATTTTCTTTTTGATCAGTTTTC

2558

0

```
δõ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Дb
                                exon
                                                                           exon
                                                                                                                           exon
                                                                                                                                                                                 exon
                                                                                                                                                                                                                                      exon
                                                                                                                                                                                                                                                                                   exon
                                                      intron
                                                                                                     intron
                                                                                                                                                          intron
                                                                                                                                                                                                       intron
                                                                                                                                                                                                                                                            intron
                                                                                                                                                                                                                                                                                                                                       promoter
                                                                                                                                                                                                                                                                                                                                                             Lycopersicon pennellii.
                                                                                                                                                                                                                                                                                                                                                                          Invertase isoenzyme; apoplast; brix value;
green-fruited tomato; eLin5; eLin7; ds.
                                                                                                                                                                                                                                                                                                                                                                                                                 04-SEP-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                              3701/c
AAD08701 standard; DNA; 13431
                                                                                                                                                                                                                                                                                                                                                                                                                                 AAD08701;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2497
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2437 AAAGTGAGTATTTTTG 2422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2557
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  632
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CTAATCACGAAACTGTTTCAGGAAAAGTATAGTAGCATGACAGGACTAGATGGTAAGACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GAACTTCAAATGCTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AAAAAAAAAATCACATTTTTTTATATGGTAAATATTTAAAAGTACAGTTTCTATTTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAACAAATAACTTTACTGTTATAGACTGCTTATATAAGTAAAAGTTCAGATTTTGTTTTT
                                                                                                                                                                                                                                                                                                                                                                                              pennellii eLin5-eLin7 invertase isoenzymes genomic DNA.
                                                                                                                                                                                                                                                                                                                                                                                                               (first entry)
                                                            /number= k
/number= 6
/note= "The above given exons and introns are
Lin5 gene"
                              8286..8670
                                                     8155..8285
                                                                           8055..8154
                                                                                                                                                                              6419..7440
                                      'number=
                                                                                                                                /number= 3
/note= "includes
                                                                                                                                                        7441..7619
                                                                                                                                                                                                      6342..6418
                                                                                                                                                                                                          /number= 2
/note= "Conserved in plants"
                         '*taq≃
                                                                                            /*tag=
                                                                                                   865..8054
                                                                                                                                                                                                                                   5333..6341
                                               *tag=
                                                                      *tag=
                                                                                                                   *tag=
                                                                                                                          620..7864
                                                                                                                                                                                                                                                                                      'product= "eLin5 invertase isoenzyme"
'note= "The CDS is interrupted by 5 i
                                                                                                                                                                                                                                                                                                                                             ocation/Qualifiers
                                                                                                                                                                                                                                                                                                                     abel= Lin5_promoter
                                                                                                                                                                                                                                                           ..6332
                                                                                                                                                                                                                                                                                ..5048
                                                                                                                                                                                                                                                                                                                .8465
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   707
                                                                                                                                                                                                                                                                                                                                                                                                                                               ВP
                                                                                                                                an
                                                                                                                                                                                                                                                                                      interrupted by 5 introns"
                                                                                                                               ORF of 30 amino acids (AAE04415)"
                                                                                                                                                                                                                                                                                                                                                                               monosaccharide; sugar; fruit;
      of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               691
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             631
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2498
```

```
WPI; 2001-418359/44.
P-PSDB; AAE04414, AAE04416.
                                                                                                                                                                                 exon
                                                                                                                   (YISS ) YISSUM RES DEV CO HEBREW UNIV JERUSALEM
                                                                                                                              04-JAN-2000; 2000US-0477375.
                                                                                                                                        02-JAN-2001; 2001WO-IL00008
                                                                                                                                                  12-JUL-2001.
                                                                                                                                                                                                               exon
                                                                                                                                                                                                                                             exon
                                                                                                                                                                                                                                                                          exon
                                                                                                                                                            WO200149826-A1
                                                                                                                                                                                                                                                                                                         exon
                                                                                                                                                                                                                                                                                                                                       exon
                                                                                                                                                                                                intron
                                                                                                                                                                                                                                                                                                                                                            CDS
                                                                                                                                                                                                                                                                                                                                                                          misc_feature
                                                                                                                                                                                                                              intron
                                                                                                                                                                                                                                                           intron
                                                                                                                                                                                                                                                                                         intron
                                                                                                                                                                                                                                                                                                                        intron
                                                                                                         Pleban T,
                                                                                                                                                                                                                                                  /number= 3
11798.12525
/*tag= "
                                                                                                                                                                                                                                        /number 3
12526..12770
                                                                                                                                                                                                                                                                       /*tag= s
/number= 2
10779..11797
                                                                                                                                                                                                                           /number= 4
12771..12868
                                                                                                                                                                                                                                                                                       /*tag= r
/number= 2
10446..10778
                                                                                                                                                                                                                                                                                                           /number= 1
                                                                                                                                                                                                                                                                                                                         /number= p
                                                                                                                                                                       /number≕
                                                                                                                                                                           13041..13431
/*tag= z
                                                                                                                                                                                                                                                                                                                                                                         8671..9900
                                                                                                                                                                                     'number=
                                                                                                                                                                                                         l2869..12965
/*tag=_x
                                                                                                                                                                                          *tag=
                                                                                                                                                                                              2966..13040
                                                                                                                                                                                                                   'number= 4
                                                                                                                                                                                                                                                                                                                  /*tag=
                                                                                                                                                                                                                        *tag=
                                                                                                                                                                                                                                                                                                        0437..10445
                                                                                                                                                                                                                                                                                                                                           product= "eLin7"
note= "The CDS i
                                                                                                                                                                                                                                                                                                                      0181..10436
                                                                                                                                                                                                                                                                                                                                       901..10180
                                                                                                                                                                                                                                                                                                                                                                note= "Unknown
                                                                                                                                                                                                                                                                                                                                                          .13223
                                                                                                         Ħ
                                                                                                                                                                                                                                                                                                                                           ŝ
                                                                                                                                                                                                                                                                                                                                                              region"
                                                                                                                                                                                                                                                                                                                                          invertase isoenzyme"
is interrupted by 5 introns"
```

Nucleic acid comprising a genomic, complementary or composite sequence encoding a polypeptide having an invertase activity in an apoplastic environment, useful for increasing the monosaccharide content of plants

Claim ω Page 85-88; 99pp; English.

genomic, complementary or composite polynucleotide sequences encoding novel apoplastic invertase isoenzymes associated with high brix value in Lycopersicon pennellii fruit, and an N terminal amino acid sequence serving for secretion into an apoplast. The invention also relates to a novel regulatory element unique to L. pennellii which is also associated with high brix trait. The polynucleotides of the invention are useful for increasing the sugar content in e.g. fruits, roots and leaves of plants expressing them. The regulatory element when integrated, leaves of plants expressing them. The regulatory element win a site specific manner, into a solanaceae plant genome, The present invention relates to nucleic acids comprising can

```
ABL32861
ID ABL33
AC ABL33
XX AC ABL33
XX DT 26-M
DT 26-M
XX Humar
XX Humar
KW Humar
KW antil
KW antil
KW antil
KW antil
KW acute
KW Gene;
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX Homo
XX 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SSSSSS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matches 102;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Human; immune system disease; cytosine methylation; antiasthmatic; antiarteriosclerotic; antianaemic; cytostatic; nootropic; neuroprotective; anti-HIV; anticonvulsant; ophthalmological; antirheumatic; antiarthritic; antidiabetic; antipsoriatic; antiinflammatory; cancer; eye disease; arteriosclerosis; anaemia; acute myeloid leukaemia; Alzheimer's disease; AIDS; epilepsy; acute myeloid leukaemia; Alzheimer's disease; AIDS; epilepsy;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                The present eLin5 and eL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 substantially increase the sugar content in tissues e.g. fruits. The present sequence is Lycopersicon pennell11 genomic DNA encoding
                                               genes
                                                                                                        Claim 1;
                                                                                                                                                                Nucleic acid comprising fragment of chemically modified gene, useful for diagnosis and treatment of diseases associated with abnormal
                                                                                                                                                                                                                                                                                                        (EPIG-)
                                                                                                                                                                                                                                                                                                                                               30-JUN-2000;
01-SEP-2000;
                                                                                                                                                                                                                                                                                                                                                                                                      02-JUL-2001;
                                                                                                                                                                                                                                                                                                                                                                                                                                               03-JAN-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      WO200200928-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Homo sapiens.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                gene;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 neurofibromatosis; rheumatoid arthritis; psoriasis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Human immune system associated
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  26-MAR-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ABL32861 standard; DNA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   12516
                        present invention provides a number of human immune system associates which are modified by the methylation of cytosines. The sequences be used in the diagnosis and treatment of immune system disorders,
                                                                                                                                                                                                                                                                Þ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          512
                                                                                                                                                                                                                           2002-130909/17.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Similarity
                                                                                                                                                                                                                                                                                                        EPIGENOMICS
                                                                                                        SEQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CTAATCACGAAACTGTTTCAGGAAAAGTATAGTAGCATGACAGGACTAGATGGTAAGACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             13431 BP; 4689 A; 1931 C;
                                                                                                                                                                                                                                                                Piepenbrock C,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAACAAATAACTTTACTGTTATAGACTGCTTATATAAGTAAAAGTTCAGATTTTGTTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TTTTTCATTAAAACACTTTCATCGTCGAGTGATATCATTTTCTTTTTGATCAGTTTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TTTCTCATTGTTCTTGCTGAATTTTGGGTAAATTTGATTTGAGTTGTCATTAGGAACC
                                                                                                                                             methylation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AAAGTGAGTATTTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GAACTTCAAATGCTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AAAAAAAAAATCACATTTTTTATATGGTAAATATTTAAAAGTACAGTTTCTATTTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  eLin7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                      ID NO 834;
                                                                                                                                                                                                                                                                                                                                             2000DE-1032529
2000DE-1043826
                                                                                                                                                                                                                                                                                                                                                                                                      2001WO-EP07537.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (first
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  invertase isoenzymes
                                                                                                                                                                                                                                                                                                        ĄG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2.1%;
52.0%;
      such
                                                                                                      32pp +
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                7631
                                                                                                                                                                                                                                                                   Berlin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               12321
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    707
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score 45.6; Di
Pred. No. 0.26
0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0;
      retinopathy, neovascular glaucoma
                                                                                                    Sequence Listing; German
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           gene SEQ
                                                                                                                                                                                                                                                                ζ.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2052 G;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ij
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    BG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             4759 T; 0 other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             94;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      22;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 13431;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   bowel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 disease;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         12337
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                691
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            631
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 12457
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       12397
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      571
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0
RESULT 14
ABL33728
ID ABL33
XX
AC ABL33
XX
DT 26-MI
XX
DE Huma
XX
Huma
KW Huma
KW neu
KW acu
KW acu
KW neu
KW neu
KW neu
KW gen
XX
YX
OS Hon
XX
PD 03
XX
PP 02
XX
PR 31
PR 0
YX
PI C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ត្តត្តត្តន<u>ុ</u>ន្ធ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
    Olek A,
                                                                                01-SEP-2000;
                                                                                                  30-JUN-2000;
                                                                                                                                         02-JUL-2001; 2001WO-EP07537
                                         (EPIG-)
```

```
Query Match
Best Local S
Matches 176
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                macular degeneration, arteriosclerosis, anaemia, cancer, acute mys leukaemia, Alzheimer's disease, AIDS, epilepsy, neurofibromatosis, rheumatoid arthritis, psoriasis and inflammatory/ulcerative bowel diseases. The present sequence is a gene of the invention.
816
                                                                                                                                    969
                                                                                                                                                                                                      636
                                                                                                                                                                                                                                                                                                                                                                              530
                                                                                                                                                                                                                                                                                                                                                                                                              456
                                                                                                                                                                                                                                                                                                                                                                                                                                                470
                                827
                                                                756
                                                                                                  767
                                                                                                                                                                    707
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                176;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                 GTATATGCAATTACATTTCGTTAGTGTAGTGGGAGGATTATATTTCTCATTGTTTCTTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  7631 BP;
                 ATTGATTGTTTGTAT
                                                                TAAGGTAAATTATATATGTAGATAGAGAGAATTTTATGTTTTAGTGATATTTCGAGTG
                                                                                                                                  TTTTTTTGATGATAGTTTTGAAGTAGAGATTTATTGTTAAGGAATAGTGAGAATTAAATA
                                                                                                                                                                  GCTTTTAAATCTTCAAAGATTAGACTCTTGAGGAGTATGGCAATAGAGAATGAGACAATG
                                                                                                                                                                                                                                      CAGGAAAA - - - GTATAGTAGCATGACAGGACTAGATGGTAAGACCGAACTTCAAATGCTT
                                                                                                                                                                                                                                                                        TTATAGACTGCTTATATAAGTAAAAGTTCAGATTTTGTTTTTCTAATCACGAAACTGTTT
                                                                                                                                                                                                                                                                                                                                          GTTTATGAATCGATATTAGTATCGTTTAGTTGTGATTTTATTTTTAGTTTTTTGGTTAT
TTTTATTTTTTGTAT 830
                                                                                                CAGGTTTAACTTCAGCAGTACAAACTGATTGCTTTAGTCCCATTTCCTTACTTTCAATTG
                                                                                                                                                                                                    AATGAGATAGGGAAGAGAAGAGAGATATTATATGTTAAGAATTTTGTTTAAGTGATA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1870 A; 44 C; 1567 G; 4150 T;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2.18;
                                841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score 45.4;
Pred. No. 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DB
. 23;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                196;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                24;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0 other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      cancer, acute myeloid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ω
••
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                        649
                                                                                                                                                                                                      695
                                                                                                                                                                                                                                      706
                                                                  815
                                                                                                  826
                                                                                                                                    755
                                                                                                                                                                  766
                                                                                                                                                                                                                                                                        635
                                                                                                                                                                                                                                                                                                                                          575
                                                                                                                                                                                                                                                                                                                                                                            589
                                                                                                                                                                                                                                                                                                                                                                                                              515
```

antiarteriosclerotic; antianaemic; cytostatic; nootropic; neuroprotective; anti-HIV; anticonvulsant; ophthalmological; antirheumatic; antiarthritic; antidiabetic; antipsoriatic; antiinflammatory; cancer; eye disease; arteriosclerosis; acute myeloid leukaemia; Alzheimer's disease; AIDS; epil 03-JAN-2002. WO200200928-A2 Human; immune Human immune system associated gene 26-MAR-2002 ABL33728; ABL33728 sapiens. standard; (first system disease; cytosine methylation; antiasthmatic; rheumatoid DNA; entry) 17721 arthritis; SEQ ID NO: 1701

psoriasis;

epilepsy; bowel disease; anaemia;

EPIGENOMICS

AG

2000DE-1032529 2000DE-1043826

Piepenbrock C,

Berlin

×.

```
ABL34007
                                                                                                                                                        RESULT 15
                                                                                                                                                                                                  밁
                                                                                                                                                                                                                       Ş
                                                                                                                                                                                                                                                  В
                                                                                                                                                                                                                                                                          δÃ
                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                           δÃ
                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                             뫄
                                                                                                                                                                                                                                                                                                                                                                                  Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                      ρ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ρ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       XX CCCCCCCXXX PTTXXXX
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local
Human; immune system disease; cytosine methylation; antiasthmatic;
antiarteriosclerotic; antianaemic; cytostatic; nootropic;
                                               Human
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     The present invention provides a number of human immune system associated genes which are modified by the methylation of cytosines. The sequences can be used in the diagnosis and treatment of immune system disorders, including eye diseases such as retinopathy, neovascular glaucoma and macular degeneration, arteriosclerosis, anaemia, cancer, acute myeloid leukaemia, Alzheimer's disease, AIDS, epilepsy, neurofibromatosis, rheumatoid arthritis, psoriasis and inflammatory/ulcerative bowel diseases. The present sequence is a gene of the invention.
                                                                         26-MAR-2002
                                                                                                     ABL34007;
                                                                                                                            ABL34007 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Claim 1; SEQ ID NO 1701; 32pp + Sequence Listing;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  WPI;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence 17721 BP; 4634 A; 328 C; 4081 G; 8678 T; 0 other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            cytosine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Nucleic acid comprising
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Local Sir
hes 223;
                                                                                                                                                                                               12127
                                                                                                                                                                                                                                                                                                                                                                                                              11887
                                                                                                                                                                                                                                                                                                                                                            11947
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           11712
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               11652
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                591
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      531
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       471
                                             immune
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2002-130909/17
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ic acid comprising fragment of chemically modified gene, us iagnosis and treatment of diseases associated with abnormal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TATATGCAATTACATTTCGTTAGTGTAGTGGGAGGATTATATTTCTCATTGTTTCTTGCT
                                                                                                                                                                                              TATTTTGAGTTGTTTTGTT 12145
                                                                                                                                                                                                                       GTTATCTTCTAGTTATGCT 969
                                                                                                                                                                                                                                            ACTCCCATATTCTGTGCTAACTTTTTCACATCTACCAACGTTAACATAGTTGTATTGTAA
                                                                                                                                                                                                                                                                                                ATTGTTTGTATCTTCGCTTAGGTCTTTGACTTTGCGGGTTTCATGGAGCCTGAGTATGAT
                                                                                                                                                                                                                                                                                                                                                   TTTATAATTTATTTTTTTTGAAGTTTGTTATTTGGGAGTTTTATTTGTATGATAAAATTT
                                                                                                                                                                                                                                                                                                                                                                             ATATTTTATTATTTTTGGAATTATTGATAGAATAGATTTTTAAAGTTTGAAAAGAAATA
                                                                                                                                                                                                                                                                                                                                                                                                                             TTAAATCTTCAAAGATTAGACTCTTGAGGAGTATGGCAATAGAGAATGAGACAATGCAGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TATAGACTGCTTATATAAGTAAAAGTTCAGATTTTGTTTTTCTAATCACGAAACTGTTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TTTAATTAT----TATTGTTTTAGGGTATGTTTTGTAAATTAAAAATAAAATTATAGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TTTTTTCGTTTTTGTATAATTAATTGAATGGATTTATTTTTTAGTTAAGGGTATTTTAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            methylation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                             system
                                                                       (first
                                                                                                                             DNA;
                                           associated
                                                                     entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2.18;
                                                                                                                             18434
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Score 45.4; DB Pred. No. 0.33;
                                                                                                                             ВP
                                           gene SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DB 24;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               271;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 17721;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                German
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ن
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   useful
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                             890
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   530
                                                                                                                                                                                                                                                                                                  12066
                                                                                                                                                                                                                                                                                                                                                     .12006
                                                                                                                                                                                                                                                                                                                                                                                                         11946
                                                                                                                                                                                                                                                                                                                                                                                                                                  770
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 11826
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          650
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    11766
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               590
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         11711
                                                                                                                                                                                                                                                                                                                                                                                                                                                             11886
```

```
SOX CCCCCCCXXXIII
                                                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                    Matches 163;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       The present invention provides a number of human immune system associated genes which are modified by the methylation of cytosines. The sequences can be used in the diagnosis and treatment of immune system disorders, including eye diseases such as retinopathy, neovascular glaucoma and macular degeneration, arteriosclerosis, anaemia, cancer, acute myeloid leukaemia, Alzheimer's disease, ADDS, epilepsy, neurofibromatosis, rheumatoid arthritis, psoriasis and inflammatory/ulcerative bowel diseases. The present sequence is a gene of the invention.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Claim 1; SEQ ID NO 1980; 32pp + Sequence Listing; German.
                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence 18434 BP; 5581 A;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     cytosine methylation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Nucleic acid comprising frag
for diagnosis and treatment
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   WPI; 2002-130909/17
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Olek A,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              30-JUN-2000;
01-SEP-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 neuroprotective; anti-HIV; anticonvulsant; ophthalmological; antirheumatic; antiarthritic; antidabetic; antipsoriatic; antiinflammatory; cancer; eye disease; arteriosclerosis; ana acute myeloid leukaemia; Alzheimer's disease; AIDS; epilepsy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            02-JUL-2001;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          03-JAN-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          WO200200928-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     gene; ds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      neurofibromatosis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (EPIG-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Homo sapiens.
                                                                                                                               15893
                                                                                                                                                                                                                                                          15773
                                                                                                                                                                                              15833
                                                                                                 748
                                                                                                                                                               889
                                                                                                                                                                                                                            628
                                                                                                                                                                                                                                                                                                                                                     508
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                EPIGENOMICS AG.
                                                                                                                                                                                                                                                                                                                TAGATTAGTTAATTTTAGAATAATGGGAAGTTGTATATTTTTAGTAAAATAGAGATTTAT 15772
ATTTCCTTACTTTCAATTGATTGATTGTTTGTATCTTCGCTTAGGTCTTTGACTTTGCG
                                                           AATAGAGAATGAGACAATGCAGGTTTAACTTCAGCAGTACAAACTGATTGCTTTAGTCCC
                                                                                                                          GGAAGAATTATTTGATAAAATATAGTAAGTTATAGAGATCGGAGTGATAAGTTAGATATA
                                                                                                                                                                                       TTTTCTAATCACGAAACTGTTTCAGGAAAAGTATAGTAGCATGACAGGACTAGATGGTAA 687
                                                                                                                                                                                                                                                                                                                                              TATATTTCTCATTGTTTCTTGCTGTGAATTTTGGGTAAATTGATTTGAGTTGTCATTAGG
                                                                                                                                                        GACCGAACTTCAAATGCTTGCTTTTAAATCTTCAAAGATTAGACTCTTGAGGAGTATGGC
                                                                                                                                                                                                                                                      AACCAAACAAATAACTTTACTGTTATAGACTGCTTATATAAGTAAAAGTTCAGATTTTGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Piepenbrock C,
                                                                                                                                                                                                                                                                                                                                                                                   Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2000DE-1032529.
2000DE-1043826.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2001WO-EP07537
                                                                                                                                                                                                                                                                                                                                                                                                2.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    rheumatoid arthritis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 fragment of chemically modified ment of diseases associated with
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Berlin
                                                                                                                                                                                                                                                                                                                                                                                                                                             233 C; 4257 G; 8363 T;
                                                                                                                                                                                                                                                                                                                                                                                 0;
                                                                                                                                                                                                                                                                                                                                                                                              Score 45.4;
Pred. No. 0.
                                                                                                                                                                                                                                                                                                                                                                               Mismatches 196;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                7
                                                                                                                                                                                                                                                                                                                                                                                                             DB 24;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AIDS;
                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                             Length 18434;
                                                                                                                                                                                                                                                                                                                                                                                                                                             0 other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 epilepsy;
bowel disease;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 gene, use abnormal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               anaemia;
                                                                                                                                                                                                                                                                                                                                                                              0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 useful
                                                                                                                                                                                                                                                                                                                                                                              Gaps
1607
                                                                                                                                                                                                                                                                                    627
                                                                                                                                                                                                                                                                                                                                                567
                                                                                           807
                                                                                                                                                                                                                                                      15832
                                                                                                                                                                                                                                                                                                                                                                              o
```

Job time : 342 secs 24, 2003, 12:40:21 Ş ₽ 20 닭 Ş В

В Š

Š

밁 δÃ

BG127982 BM887362 AL063921

вJ169198 BM382166

BI427080 AL063921

BM5217 BG0978

19

AW756255 ALIO52596 ALIO98595 ALIO98595 ALIO98595 ALIO971063 ALIO71063 ALIO98595 ALIO98597 ALIO82049 ALIO682049 ALIO682049 ALIO682049 ALIO682049 ALIO71298 ALIO71298 ALIO71298 ALIO71298 ALIO71298 ALIO71298 ALIO71298 ALIO71298 ALIO71298 ALIO71298 ALIO71298 ALIO71298 ALIO71298 ALIO71298 ALIO71298 ALIO71298 ALIO71298 ALIO71865 ALIO71865 ALIO71865 ALIO71865 ALIO71865 ALIO71865 ALIO71865

T7 end of Drosophil Drosophil

Drosophil Drosophil ENTCO36TF

Drosophil Drosophil

5 Drosophil
6 clone BAO
1 Drosophil
7 Drosophil
7 Drosophil
5 Drosophil
6 Drosophil
6 BOHKO52TF

EST 01-APR-2002

AZ128578 BE940987 BE611353

BH543454 AW234724

sf18e08 BOGDJ52TR

```
Result
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Minimum DB
Maximum DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Post-processing: Minimum Match 0%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            OM nucleic -
                                                   00 1
                                C
                                                                                                     ŏ
                                                                                                                                                                       Pred. No. is the score greater the and is derived by
                                                                                                   Score
    396
373
309
111
101.6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  seq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         nucleic search, using sw model
                                                                                                                                                                                                                             EST:*
: en,
2: en,
3: en,
4: em,
6: em,
6: em,
7: em,
8: em,
11: cg,
111: cg,
112: cg,
113: cg,
114: cg,
115: cg,
116: cg,
117: cg,
118: c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  length:
                                                                                                   Query
Match
                                                                                                                                                                   is the number of results predicted by chance to have a ater than or equal to the score of the result being printed, rived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       16154066 seqs, 8097743376 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gapop 10.0 , Gapext 1.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-09-870-406A-32
2160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               June 24, 2003, 11:46:34; Search time 2052 Seconds (without alignments) 17047.881 Million cell updates/sec
    18.3
17.3
14.3
5.1
4.7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          gaattccccacgtcaacgtg...
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GenCore version 5.1.6 Copyright (c) 1993 - 2003 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                          em_htc:*
gb_est1:*
gb_est2:*
gb_htc:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                em_estmu:*
em_estov:*
em_estpl:*
em_estro:*
                                                                                                                                                                                                                                                                                                                                                                      em_estfun:*
em_estom:*
gb_gss:*
                                                                                                                                                                                                                            em_gss_other:*
em_gss_pro:*
em_gss_rod:*
                                                                                                                                                                                                                                                                                                 em_gss_pln:*
em_gss_vrt:*
em_gss_fun:*
                                                                                                                                                                                                                                                                                                                                                                                                                               gb_est3:*
gb_est4:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        em_estin:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       em_esthum:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    em_estba:*
                                                                                                                                                                                                                                                                      em_gss_mam:*
em_gss_mus:*
                                                                                                                                                                                                                                                                                                                                          em_gss_inv:*
                                                                                                                                                                                                                                                                                                                                                         em_gss_hum:
                                                                                                                                                                                                                                                                                                                                                                                                                  gb_est5:*
                                                                                                   Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2000000000
    396
417
309
111
404
606
                                                                                                     BB
     10
9
17
17
12
              AV814470
AI999062
CNSOONER
AQ011370
BG544889
                                                                                                   Ħ
    BM110119
                                                                                                                                             SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            .....tcgtctctacctaatcaaca
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            32308132
AV814470 AV814470
AI999062 701516996
AL081825 Arabidops
AQ011370 F27D23TRC
BG544889 E2953 Ch1
BM110119 EST557655
                                                                                                Description
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2160
                                                                                                              TITLE
JOURNAL
COMMENT
                                                                                                                                                                                                 REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                    ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                      RESULT 1
AV814470/c
LOCUS
                                                                                                                                                                                                                                                                                                                                                       DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ဂ ဂ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               O
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    0 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            48.8
48.4
48.2
48.2
47.8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Large scale analysis of Arabidopsis full-length cDNA (2002b)
Unpublished (2002)
Contact: Motoaki Seki
Plant Functional Genomics Research Group
RIKEN Genomic Sciences Center
3-1-1 Koyadai, Tsukuba, Ibaraki 305-0074, Japan
Tel: 81-298-36-4359
Fax: 81-298-36-9060
Email: msekl@rtc.riken.go.jp
An Arabidopsis full-length cDNA library was constructed essentially
as reported previously (Seki et al., 1998). cDNA cleaved with BamHI
                                                                                                                                                       Seki,M., Narusaka,M., Ishida,J., Kamiya,A., Satou,M., Nakajima,M., Oono,Y., Sakurai,T., Carninci,P., Kawai,J., Itoh,M., Ishil,Y., Arakawa,T., Shibata,K., Shinagawa,A., Muramatsu,M., Hayashizaki,Y. and Shinozaki,K.
                                                                                                                                                                                                             Arabidopsis thaliana Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae; eurosids II; Brassicales; Brassicaceae; Arabidopsis. 1 (bases 1 to 396)
                                                                                                                                                                                                                                                                                                                           mRNA sequence.
AV814470
                                                                                                                                                                                                                                                                                                                                                       AV814470 AFL9 Arabidopsis thaliana
                                                                                                                                                                                                                                                                                                                AV814470.1
                                                                                                                                                                                                                                                                                  thale cress.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               \omega
                                                                                                                                                                                                                                                                                                                GI:19856262
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 B1427080
BC097819
BC097819
BC097819
BC097819
BM521774
AM75625
CNS0152R
CNS0152R
CNS0152R
CNS07206
CNS00726
CNS00726
CNS00726
CNS00727
CNS0177R
CNS0177R
CNS0177R
CNS0177R
CNS0177R
CNS0177R
CNS0177R
CNS0177R
CNS0177R
CNS0177R
CNS0177R
CNS0177R
CNS0177R
CNS0177R
CNS0177R
CNS0177R
CNS0177R
CNS0177R
CNS0177R
CNS0177R
CNS0177R
CNS0177R
CNS0177R
CNS0177R
CNS0177R
CNS0177R
CNS0177R
CNS0177R
CNS0177R
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         BM382166
BJ169198
BG127982
BM887362
CNS0039G
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          BM038189
AZ128578
                                                                                                                                                                                                                                                                                                                                                                                                                                           ALIGNMENTS
                                                                                                                                                                                                                                                                                                                                                       cDNA clone RAFL09-83-B22
```

```
RESULT 2
AI999062/c
                                                                                                                     REFERENCE
                                                                                                                                                                                        SOURCE
                                                                                                                                                                                                   KEYWORDS
                                                                                                                                                                                                                                                                            LOCUS
                                                                                                                                                                                                                     VERSION
                                                                                                                                                                                                                                ACCESSION
                                                                                                                                                                                                                                                           DEFINITION
                                                                                                    AUTHORS
                                                                                                                                                                          ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   BASE COUNT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Matches 396;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local :
1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            source
                                                                                                                                                                                                                                                                                                                                                                           2112
                                                                                                                                                                                                                                                                                                                                                                                                                                  2052
                                                                                                                                                                                                                                                                                                                                                                                                                                                            1992 GAAAGAGCAGCATGAGGAGTCTCTCAGGTCTATCTGCATTTCAAGATGATTGTTTGAGTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1932
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1872
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1812
          Chen, J., Momiyama, M., Chan, E., Mooney, M., Carroon, B., Gilliland, D., Wang, X., Hillman, J., Guegler, K., Kin, C., Doyle, M., Brzoska, P., Gorgone, G., Burns, D., Griffin, J., Mouanoutoua, M., Nguyen, D., Tan, R., Rose, M., Warren, B., Ton, B., Kastury, K., Borillo, C., Carpio, T., Policky, J., Suzuki, G., Argentine, C., Shah, S., Nobriga, A., Murry, L., Turner, C., Krikorian, S., Elder, L. and Hanson, D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    216
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           276
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 336
                                                                                                   Arabidopsis thaliana
Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnollophyta; eudicotyledons; core eudicots;
Rosidae; eurosids II; Brassicales; Brassicaceae; Arabidopsis.
                                                                                                                                                                                                                                                                                                                                               36
                                                                                                                                                                                                                                                                                                                                                                                                     96
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       396
                                                                                                                                                                                                                             AI199062 A. thaliana, Columbia Col-0, rosette-3 thaliana cDNA clone 701516996, mRNA sequence.
                                                                                                                                                                                                    EST
                                                                                                                                                                                    thale cress.
                                                                                                                                                                                                              AI999062.1 GI:5845967
                                                                                                                                                                                                                                                                                                                                                                                    AGTATGATATGATTTTAATGAAAATGTATTCGTCTC
                                                                                                                                                                                                                                                                                                                                   AGTATGATATGATTTTAATGAAAATGTATTCGTCTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                            GAAAGAGCAGCATGAGGAGTCTCTCAGGTCTATCTGCATTTCAAGATGATTGTTTGAGTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TATGAAACTCGTCCATGGGATTTAACAGGACAATTTATCGGCTAACAATGATATATGTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TATGAAACTCGTCCATGGGATTTAACAGGACAATTTATCGGCTAACAATGATATATGTGA 1931
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    and XhoI was ligated to modified Lambda FLC-1 vector (Carninci et al., submitted for publication) digested with BamHI and SalI. This clone is in a modified pBluescript vector. Please visit our web site (http://www.gsc.riken.go.jp/e/plant/index _e.html) for further details.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ACAAGTCAGATTTCAGAGTCATCAACAAGAGGACGTGAACTTAGGGAAGTAGGAATAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ACAAGTCAGATTTCAGAGTCATCAACACAAGAGGACGTGAACTTAGGGAAGTAGGAATAA 1991
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CCAGAGTACCAAACAGAAGATGGAACTGTAAGCGATAAACGAAGTATCATTGGGAAGTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CCAGAGTACCAAACAGAAGATGGAACTGTAAGCGATAAACGAAGTATCATTGGGAAGTCA 1871
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      111
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        18.3%;
ilarity 100.0%;
Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ۵
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /organism="Arabidopsis t
/db_xref="taxon:3702"
/clone="RAFL09-83-B22"
/clone_lib="RAFL9"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /note="Site_1: BamHi; dehydration (1, 2, 5, hr) treatments"
hr) treatments 63 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /dev_stage="plants at various developmental stages germination to mature seeds" /lab_host="DHIOB"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 396;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        63 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           133
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Site_2: SalI; subjected 10, 24 hr) and cold (1,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ; DB 10;
. 4.9e-87;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     thaliana"
                                                                                                                                                                                                                                                                                                                                     _
                                                                                                                                                                                                                                                                                                                                                                2147
                                                                                                                                                                                                                                                             linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 396;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                           Arabidopsis
                                                                                                                                                                                                                                                        EST 08-SEP-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               10,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2051
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   157
                                                                                                                                                                                                                                                                                                                                                                                                                                              97
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     337.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         217
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                277
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1811
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               24
                     ACCESSION
VERSION
                                                                                             RESULT 3
CNSOONER
LOCUS
                                                                               DEFINITION
                                                                                                                                                                                                                        Ъ
                                                                                                                                                                    밁
                                                                                                                                                                                        γQ
                                                                                                                                                                                                                                                  Ω
                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                        δÃ
                                                                                                                                                                                                                                                                                                                                      Dр
                                                                                                                                                                                                                                                                                                                                                                δÃ
                                                                                                                                                                                                                                                                                                                                                                                             DЬ
                                                                                                                                                                                                                                                                                                                                                                                                                         δã
                                                                                                                                                                                                                                                                                                                                                                                                                                                      망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ν
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              source
                                                                                                                                                                                                                                                                                                                                                                                                                       1861
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1801
                                                                                                                                                                                                                                                                                                                                      204
                                                                                                                                                                                                                                                                                                                                                                                             264
                                   Survey s
AL081825
                                                                                                                                                                                                                     85
                                                                                                                                                                                                                                                                                                                                                                                                                                                    324
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         384
                                               Arabidopsis thaliana genome survey sequence SP6 end of BAG
IGF library from strain Columbia of Arabidopsis thaliana,
                                                                                                                                                                 25
       AL081825.1 GI:5282965 GSS.
                                                                                          CNS00NER
```

Qy

sequence.

dq

GSS 28-JUN-1999 of BAC F3L24 of

밁 δÃ 밁 QY 밁 γQ 밁 δÔ ₽ Qy В QΥ

```
Query Match
Best Local S
Matches 384
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TITLE
JOURNAL
2101 GAGAATCCTCGAGTATGATATGATT 2125
                                                     2041 TTGTTTGAGTTACCATGCATTGTAGTTTTACAAGTGTAGCTCTCAGCCCTTCATCAAAAT
                                                                                                                   1981 AGTAGGAATAAGAAAGAGCAGCATGAGGAGTCTCTCAGGTCTATCTGCATTTCAAGATGA 2040
                                 TTGTTTGAGTTACCATGCATTGTAGTTTTACAAGTGTAGCTCTCAGCCCTTCATCAAAAT
                                                                                                   AGTAGGAATAAGAAAGAGCAGCATGAGGAGTCTCTCAGGTCTATCTGCATTTCAAGATGA
                                                                                                                                                                                       GATATATGTGAACAAGTCAGATTTCAGAGTCATCAACACAAGAGGACGTGAACTTAGGGA 1980
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Similarity
                                                                                                                                                                   GATATATGTGAACAAGTCAGATTTCAGAGTCAACAA ACAAGAGGACGTGAACTTAGGGA 146
                                                                                                                                                                                                                                 TTGATTACTTTCCAGAGTACCAAACAGAAGATGGAACTGTAAGCGATAAACGAAGTATCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Genome Systems, Inc., a Pharmaceuticals, Inc.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Arabidopsis thaliana Gene Expression Unpublished (1999)
Contact: David Smoller, Ph.D.
                                                                                                                                                                                                                                                                                                                                                                                        AGGAGCTGCTAAGGGATTTCCTGTTCAATGGGGTGGATGAGTTAGGCACAAAAACATTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            4633 World Parkway Circle,
                                                                                                                                                                                                                                                                                                   TTGATTACTTTCCAGAGTACCAAACAGAAGATGGAACTGTAAGCGATAAACGAAGTATCA
                                                                                                                                                                                                                                                                                                                                                                   Fax: 314-427-3324
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   112
                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   service@genomesystems
Location/Qualifiers
1..417
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /note="Vector: psport; Site_1: Not1; Site_2: Sal1; cDNA library was derived from untreated rosette tissue from Arabidopsis thaliana, Columbia Co1-0, at 4 - 7 weeks. Plants were grown in 1:1:1 peat moss/vermiculite/perlite soil at 22 deg. C +/- 3 deg. C under constant light, and using a Not1-oligo(dT) primer. Double-stranded cDNA was size-selected, and cloned into the Not1 and Sal1 sites of the psport vector."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /db_xref="taxon:3702"
/clone="701516996"
/clone=116"A. thaliana, Columbia Col-0,
/tissue_type="rosette"
/dev_stage="4 - 7 weeks"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /cultivar="Columbia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /organism="Arabidopsis thaliana"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          pSPORT vector."
98 c 64 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                              17.3%;
99.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 373; DB 9;
Pred. No. 2.4e-81;
                                                                                                                                                                                                                                                                                                                                                                                                                                          Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            wholly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            St.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Col-0"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          143 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Louis,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            owned
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       subsidiary of Incyte
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MicroArray
                                                                                                                                                                                                                                                                                                                                                                                                                                            0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MO 63134,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 417;
                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     rosette-3"
                                                                                                                                                                                                                                                                                                                                                                                                                                       1;
                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                     86
                                                                                                                                                                                                                                                                                                                                   1860
                                                                                                                                                                                                                                                                                                     265
                                                                                                                                                                                                                                                                                                                                                                     325
                                                                                                                                                                                                                                                                                                                                                                                                   1800
                                                                                                                                                                                                                                                                                                                                                                                                                                 1;
```

```
RESULT 4
AQ011370/c
LOCUS
                                                                                                                                                                                                                                                                                                             В
                                                                                                                                                                                                                                                                                                                                  ρy
                                                                                                                                                                                                                                                                                                                                                                     В
                                                                                                                                                                                                                                                                                                                                                                                             δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                Ъ
                                                                                                                                                                                                                                                                                                                                                                                                                                                      VQ.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ρy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          BASE
                                                                                                                          SOURCE
ORGANISM
                                                                 REFERENCE
                                                                                                                                                      KEYWORDS
                                                                                                                                                                        VERSION
                                                                                                                                                                                      ACCESSION
                                                                                                                                                                                                                    DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Best
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AUTHORS
    TITLE
                                                 AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            COUNT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Local
                                                                                                                                                                                                                                                                                                                                                                        241
                                                                                                                                                                                                                                                                                                                                                                                                     247
                                                                                                                                                                                                                                                                                                            301
                                                                                                                                                                                                                                                                                                                                          307
                                                                                                                                                                                                                                                                                                                                                                                                                                   181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              127
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        67
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   309;
Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae; eurosids II; Brassicales; Brassicaceae; Arabidopsis. 1 (bases 1 to 111)
Rounsley, S.D., Suh, E.J., Wible, C., Golden, K., Shatsman, S., Choi, P., Yu, K., Akinretoye, B., Shen, K., Goonasekaram, S., Militscher, J., Adams, M.D. and Venter, J.C.
ABAC End Sequence Database for Identifying Minimal Overlaps in
                                                                                                                                                                                                                 AQ011370 111 bp
F27D23TRC IGF Arabidopsis thaliana
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Submitted (25-JUN-1999) Genoscope
BP 191 91006 EVRY cedex - FRANCE (E-
Web : www.genoscope.cns.fr)
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Salanoubat, M., Choisne, N., Artiguenave, F., Brottier, P., Wincker, P., Samson, D., Saurin, W., Weissenbach, J. and Quetier, F.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae; eurosids II; Brassicales; Brassicaceae; Arabidopsis.
                                                                                                                        Arabidopsis thaliana
                                                                                                                                                                                                   sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Genoscope.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Arabidopsis thaliana
                                                                                                                                          thale cress.
                                                                                                                                                                      AQ011370.1 GI:3166615
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Unpublished
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Arabidopsis thaliana
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ACCIGITCT 315
                                                                                                                                                                                                                                                                                                                                                                                                                                                AGAATTGAAGAGAGTGTCCGAGGAAGGAGACCTTTGGTTTCAGTTTGTGAGTCTTGTTGT 246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ACTCGGACGGATGTTGAAATTCATTGTCGTTGCCAATTGCGTTTGTCTCACTGAAACTGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ACTCGGACGGATGTTGAAATTCATTGTCGTTGCCAATTGCGTTTGTCTCACTGAAACTGT 126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CCCACGTCAACGTGACTGTGCATTCCACGTGGCGGATGTGGGCCCTATAGTTGGACCATG
                                                                                                                                                                                                                                                                                                            ACCTGTTCT 309
                                                                                                                                                                                                                                                                                                                                                                       AATGGCTTTATCAATGGAGTTTGGGTTTTCAATTGGGTCATGCTTCAAGGCACCAAACCC
                                                                                                                                                                                                                                                                                                                                                                                                   AATGGCTTTATCAATGGAGTTTGGGTTTTCAATTGGGTCATGCTTCAAGGCACCAAACCC 306
                                                                                                                                                                                                                                                                                                                                                                                                                                   AGAATTGAAGAGAGTGTCCGAGGAAGGAGACCTTTGGTTTCAGTTTGTGAGTCTTGTTGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (bases 1 to 309)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (bases 1 to 309)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              14.3%;
ilarity 100.0%;
Conservative (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /organism="Arabidopsis t
/strain="Columbia"
/strain="columbia"
/db_xref="taxon:3702"
/clone="F3L24"
/clone_lib="IGF"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /note="end : SP6"
56 c 75 c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score 309; DB 17;
Pred. No. 1.4e-65;
0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            105
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     thaliana"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              e - Centre National de Sequencage :
    (E-mail : seqref@genoscope.cns.fr
                                                                                                                                                                                                                 genomic clone F27D23,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 309;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels
                                                                                                                                                                                                                                GSS 29-MAY-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                       300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          120
                                                                                                                                                                                                                                                                                                                                                                                                                                240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   66
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT 5
BG544889
                                                                                                            FEATURES
                                                                                                                                                                                                                                                                                                                                                                     SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                  ACCESSION
VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ğ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   COMMENT
                                                                                                                                                                                                                                 COMMENT
                                                                                                                                                                                                                                                                                                          REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                              DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          BASE COUNT
                                                                                                                                                                                                                                                                                                                                                                                                     KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Matches 111;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  JOURNAL
                                                                                                                                                                                                                                               JOURNAL
                                                                                                                                                                                                                                                               TITLE
                                                                                                                                                                                                                                                                                          AUTHORS
                                                                                            source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         51
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            29
```

```
Brassica rapa subsp. pekinensis.
Brassica rapa subsp. pekinensis
Eukaryota; Tracheophyta; Embryophyta; Tracheophyta;
Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnollophyta; eudicotyledons; core eudicots;
Rosidae; eurosids II; Brassicales; Brassicaceae; Brassica.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      BG544889 404 bp mRNA E2953 Chinese cabbage eticlated seedling subsp. pekinensis cDNA clone E2953, mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 9712 Medical Center Dr., Rockville,
Tel: 301 838 0200
Fax: 301 838 0208
                                                                                                                                                                                                                      gyeongsang National University
#900 Gazwa-dong, Jinju 660-701,
Tel: 82 55 751 6255
Fax: 82 55 759 9363
                                                                                                                                                                                                                                                                                                                                 Unpublished (2001)
Contact: Lim, C.O.
                                                                                                                                                                                                                                                                                                                                                                   1 (bases 1 to 404)
Ryu,S.H., Kang,J.S., Kang,C.-h., Kim,C.Y., Choi,Y.J.,
Bahk,J.D., Lee,S.Y., Cho,M.J. and Lim,C.O.
Expressed Sequence Tags of Chinese Cabbage Etiolated (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Email: rounsley@tigr.org
Seq primer: M13 Reverse
Class: BAC ends
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Unpublished (1998)
Other_GSSs: F27D23TFC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                BG544889.1 GI:20375870
                                                                                                                                                                                                                                                                                                        Plant Molecular Biology & Biotechnology
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Department of Eukaryotic Genomics
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Contact: Steve Rounsley
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Arabidopsis Genomic Sequencing.
                                                                                                                                                                                             Email: colim@nongae.gsnu.ac.kr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AAGGCACCAAACCCACCTGTTCTAATCTCTGCAAGCCCTAATAAGATCAATTTCACGTTG 352
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AGAAGGAGAAAGAAAGATTCTTACTTAGAGTCTCTGCTGTGTCGTATAAG 403
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               primer: T7.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Institute for Genomic Research
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         quality sequence stop: 111.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Produced by Thomas Altmann"
21 c 24 g 37 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /organism="Arabidopsis
/strain="Columbia"
/db_xref="taxon:3702"
/clone="F27D23"
                                           /db_xref="taxon:51351"
/clone="E2953"
                                                                                      /organism="Brassica rapa subsp.
/cultivar="Jangwon"
                                                                                                                                    1. .404
/clone_lib="Chinese cabbage etiolated seedling library"
/tissue_type="Etiolated seedling"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /sex="hermaphrodite"
/note="Vector: BeloBACII; Site_1:
                                                                                                                                                      Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /clone_lib="IGF"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              5.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score 111;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                8.8e-17;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DB 17;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MD 20850,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0
                                                                                                                                                                                                                                                                                                          Research Centre
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             linear EST 01-MAY
library Brassica rapa
                                                                                                           pekinensis'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length 111;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EcoRI; Site_2:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      EST 01-MAY-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0;
                                                                                                                                                                                                                                                                                                                                                                            Seedling
                                                                                                                                                                                                                                                                                                                                                                                                                     Lee, S.-H.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps . 0;
                                                                                                                                                                                                                                                                                                                                                                              CDNA
```

```
Дb
                                   δÃ
                                                                                                                              BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ACCESSION
VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 6
BM110119
LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                            FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  BASE COUNT
ORIGIN
                                                                    Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  JOURNAL
                                                                                                                                                                                                                                                                                                                                                                            source
                                                                                   Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Local
                    1741 AGGAGCTGCTAAGGGATTTCCTGTTCAATGGGGTGGGTGAGTTAGGCACAAAAACATTCA 1800
                                                                   135;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         196
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    746
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     119;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            76
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Van der Hoeven,R., Sun,H., Karamycheva,S.A., Tsai,J., van der Hoeven,R., Sun,H., Bougri,O., Buell,C.R., Ro
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Spermatophyta; euasterids I; Solanales; Solanaceae; Solanum.
                                                                                                                                                                                                                                                                                                                                                                                                                                                               Contact: Research Genetics, Libraries Division Tel: 1-800-711-6195
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Tanksley, S. and Baker, B. Generation of ESTs from potato roots
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               potato.
Solanum tuberosum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  BM110119.1 GI:17071552
EST.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EST557655 potato roots
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Unpublished (2001)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               BM110119
                                                                               Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                         Division tel
                                                                                                                                                                                                                                                                                                                                                                                                                                                 Email: cdna@resgen.com
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            BM110119
 AGAATGTGATTGGGGAATTCCTATTCAATGGTGTTAGTGATCTTGGGAGCAAAACATTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAGACCGAACTICAAATGCTTGCTTTTAAATCTTCAAAGATTAGACTCTTGAGGAGTATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GTCGTTCTTGAGCCTTCACCTCTCCAGGAAAGGTATAGTAGCATGACAGGACTTGATGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TCCATTGAGAACGAGACAATGCAGGTGT 223
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GCAATAGAGAATGAGACAATGCAGGTTT 773
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GTTTTTCTAATCACGAAACTGTTTCAGGAAAAGTATAGTAGCATGACATGACAGGACTAGATGGT
                                                                                                                                                                                                                                                                                                                                                                                                               clone info: please contact Research Genetics, Libraries ision tel 1-800-711-6195, email cdna@resgen.com
                                                                                                                                            186
                                                                                                                                                                                                                                                                                                                                                                                                         primer: T3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                117
                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                þ
                                                                                                                                    /note-"Vector: pBluescript SK(-); Site_1: EcoRI; Site_2: AhoI; supplier: Cornell University, Tanksley lab; sequencing; The Institute for Genomic Research. Roots we isolated from in vitro grown stem cuttings on CM medium. Roots were isolated two weeks after placing the stem cuttings from in vitro grown plants on medium."

186 c 138 g 186 t
                                                                                                                                                                                                                                              /clone_lib="potato roots"
/tissue_type="roots"
/dev_stage="in vitro grown stem cuttings"
/lab_host="SOLR"
                                                                                                                                                                                                                                                                                                                                                                            1. .606
                                                                                                                                                                                                                                                                                                               /db_xref="taxon:4113"
/clone="cPRO6I14"
                                                                                                                                                                                                                                                                                                                                          /cultivar="Kennebec"
                                                                                                                                                                                                                                                                                                                                                         /organism="Solanum tuberosum"
                                                                                                                                                                                                                                                                                                                                                                                         Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /lab_host="XL-1 Blue"
/note="Vector: pSPORT
1 94 c 89 g
                                                                              4.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                4.7%;
                                                              Score 93.6; D
Pred. No. 2.9e
0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         606 bp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 101.6;
Pred. No. 2.7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            : pSPORT 1; Site_1: 89 g 104 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ed. No. 2.7e-14;
Mismatches 29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         606
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       p mRNA
tuberosum
                                                              DB 13;
1.9e~12;
les 69;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DB 12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  29;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     linear
cDNA clone
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sal
                                                                                         Length
                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        I; Site_2:
                                                                                         606;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               404;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ronning, C.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     EST 26-NC
cPRO6I14
                                                            0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Van Aken, S.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     26-NOV-2001
06114 5' end
                                                                                                                                                                                                 Roots were
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Not
                                                                                                                                                                                                                               Site_2:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
    358
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            195
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       745
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    685
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       135
                                                           0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0
                                                                                    RESULT 8
AW234724
 VERSION
KEYWORDS
                                                                                                                                                                              Š
                              ACCESSION
                                                           DEFINITION
                                                                                                                                                    Б
                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                           Š
                                                                                                                                                                                                                                                                                                                                       BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 7
BH543454
LOCUS
                                                                           Locus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        닭
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DEFINITION
                                                                                                                                                                                                                                                                         Matches 102;
                                                                                                                                                                                                                                                                                                      Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         source
                                                                                                                                                                                                                                                                                           Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1921
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1861
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1801
                                                                                                                                                            908 TAACTITTTCACATCTACCAACGTTAACATAGTTGTAAGTTGTAAGTTATCTTCTAGTT 964
                                                                                                                                                    143
                                                                                                                                                                                                                           848 TTAGGTCTTTGACTTTGCGGGTTTCATGGAGCCTGAGTATGATACTCCCATATTCTGTGC 907
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               419
                                                                                                                                                                                                               83
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     479
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        359
                         449 bp
sf18e08.yl Gm-c1028 Glycine max
Gm-c1028-351 5', mRNA sequence.
AW234724
AW234724.1 GI:6567097
EST.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             sequence.
BH543454
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Seq primer: TR Class: sheared
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Tel:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Email: cdtown@tigr.org
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Fax: 301-838-0208
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Contact: Chris Town
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Whole genome shotgun sequencing of Brassica oleracea
Unpublished (2001)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Town, C.D., Van Aken, S., Utterback, T. and Fraser, C.M.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracl
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicot
Rosidae; eurosids II; Brassicales; Brassicaceae; Brassica
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Brassica oleracea.
Brassica oleracea
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            BOGDJ52TR BOGD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             BH543454.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          BH543454
                                                                                                                                               TAACTTCTTCACATCTGCCAACACACATAGTGGTGCTGTAAGTTATCTTCTTT 199
                                                                                                                                                                                                         TCAGGTGTTTGACTTTGCTGGTTTCATGGAGCCTGAGTATGATACACCTATATTCTGTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GATATATGTGAACAAGTCAGATTT 1944
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TIGGGAAGTCATATGAAACTCGTCCATGGGATTTAACAGGACAATTTATCGGCTAACAAT 1920
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TTGATTACTTTCCAGAGTACCAAACAGAAGATGGAACTGTAAGCGATAAACGAAGTATCA 1860
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TTAAGATAGTCTGATGTAATATTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TCGGAAAATCATTCGAAAATCGACCATGGAATGCGAGAGGAGAATTCATAGGTGATAGAG 478
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TTGATTACTTTCCTGAGTACAGATGTGAAGATGGTAAAGTAAATGAAAAGCGCAGTATGA 418
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (bases 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  is from a doubled haploid provided
                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                    71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Medical Center Drive, Rockville, 301-838-3523
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       sheared ends.
                                                                                                                                                                                                                                                                                                                                            /note="Vector: pHOS1; Site_1: BstXI; 2-3 kb sheared genomic DNA inserted into pHOS1 using BstXI linkers" a 50 c 58 g 106 t
                                                                                                                                                                                                                                                                                                                                                                                                              /organism="Brassica oleracea"
/strain="TO100DH3"
/db_xref="taxon:3712"
/clone="BOGDJ52"
                                                                                                                                                                                                                                                                                                                                                                                               /clone_lib="BOGD"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Location/Qualifiers
                                                                                                                                                                                                                                                                                      4.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    to 285)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       285 bp DNA line
Brassica oleracea genomic clone
                                                                                                                                                                                                                                                                         0;
                                                                                                                                                                                                                                                                                    Score
Pred.
                                                                                                                                                                                                                                                                         Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    502
                                                                                                                                                                                                                                                                                       93;
                                                                                                                                                                                                                                                                      DB 17; I
3.3e-12;
ches 15;
                                                       cDNA clone
                                                                       mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ьy
```

20850,

USA.

linear

BOGDJ52, DNA

a; Tracheophyta; eudicots;

Tom Osborn

Length 285;

Indels

0,

Gaps

0,

142

linear EST 17-JUL-2000 GENOME SYSTEMS CLONE ID:

```
BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TITLE
JOURNAL
                          Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Shoemaker, R., Keim, P., Vodkin, L., Erpelding, J., Coryell, V., Khanna, A., Bolla, B., Marra, M., Hillier, L., Kucaba, T., Martin, J., Beck, C. Wylle, T., Underwood, K., Steptoe, M., Theising, B., Allen, M., Bowers, Y., Person, B., Swaller, T., Gibbons, M., Pape, D., Harvey, N., Schurk, R., Ritter, E., Kohn, S., Shin, T., Jackson, Y., Cardenas, M., McCann, R., Waterston, R. and Wilson, R.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        High quality sequence stop: 427.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       This clone is available through: Genome Systems, Inc. 4633 World Parkway Circle St. Louis, Missouri 63134 For further information call: (800) 430-0030 or (314) 427-3322 Fax: (888) 919-3324 or (314) 427-3324 or contact: clones@genomesystems.com or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Washington University School of Medicine 4444 Forest Park Parkway, Box 8501, St.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Public Soybean EST Project Unpublished (1999)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae; eurosids I; Fabales; Fabaceae; Papilionoideae; Phaseoleae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Glycine max
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Email: est@watson.wustl.edu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Public Soybean EST Project
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Contact:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                :: 314 286 1800
:: 314 286 1810
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (bases 1 to 449)
                                                                                                                                            151
  Conservative
                                                                                                                                                                                primer [GACHGAGAGGAGAGAGAGTAGTCTCGGAG(T)]18V] to anchor the primer at the 5' end of the poly(A) tract. After second-strand synthesis, the cDNA ends were filled in with cloned Pfu DNA polymerase, ligated to EcoRI adapters and subsequently phosphorylated. The xhoI site within the first-strand synthesis primer was then restricted by digestion with XhoI; all XhoI sites in the cDNA would be protected by their hemimethylated status. The cDNA constructs were size-fractionated with a 500bp cutoff, using GibcoBRL Life Technologies' cDNA Size Fractionation column. The column aluent was then ligated into Stratagene's pBluescript II XR Predigested vector (pBluescript II SK(+) that has been digested with EcoRI and XhoI, and phosporylated by Stratagene). Both the white and blue colonles appear to contain recombinant plasmids with cDNA inserts, based on size (n-25). This library was constructed by Dr. Paul Keim and Dr. Virginia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Japonicus, strain USDAilO priot to harvest. Stratagene's cDNA synthesis Kit (catalog number 200401) was used to synthesize the cDNA. First-strand synthesis was performed with 5-methyl dCTP, hence the ligated cDNA was hemimethylated. A modification of Stratagene's first-strand synthesis primer was used. An 'anchor' nucleotide (V-A,C, or G) was added to the 3' end of the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Shoemaker R/Public Soybean EST Project
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       note-"Vector: pBluescript II XR: Site_1: EcoRI; Site_2: XhoI; The mRNA was isolated from roots of Glycine max 'Supernod' plants generously donated by Dr. Gary Stacey. The seedlings were innoculated with Bradyrhizoblum
                                                                                                                                                                       library was constructed 
Coryell."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /tissue_type="roots of 'Supernod' plants"
/lab_host="DH10B"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /clone="GENOME SYSTEMS CLONE ID: Gm-c1028-351"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /db_xref="taxon:3847"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /clone_lib="Gm-c1028"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   organism="Glycine"
                             4.2%;
                                                                                                                                            69
                                                                                                                                         ი
  0;
                          Score 90.6; DB 10 Pred. No. 1.5e-11;
                                                                                                                                      106 g
Mismatches
                                                                                                                                         122
                                                    DB 10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Louis, MO 63108,
                                                                                                                                      1 others
                                                    Length 449;
Indels
0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Phaseoleae;
Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       , Khanna
Beck,C.,
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              QΨ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Focus
```

```
RESULT 9
AW234631
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1921 GATATA 1926
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1861 TTGGGAAGTCATATGAAACTCGTCCATGGGATTTAACAGGACAATTTATCGGCTAACAAT 1920
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1741 AGGAGCTGCTAAGGGATTTCCTGTTCAATGGGGTGGATGAGTTAGGCACAAAAACATTCA 1800
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           423 TGTATA 428
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Email: est@watson.wustl.edu
This clone is available through: Genome Systems, Inc. 4633 World
Parkway Circle St. Louis, Missouri 63134 For further information
call: (800) 430-0030 or (314) 427-3222 FAX:(888) 919-3324 or (314)
427-3324 or contact: clones@genomesystems.com or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Y., Person,B., Swaller,T., Gibbons,M., Pape,E,R., Ritter,E., Kohn,S., Shin,T., Jackson,Y.,R., Waterston,R. and Wilson,R.
Public Soybean EST Project
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Shoemaker, R., Keim, P., Vodkin, L., Erpelding, J., Coryell, V., Khanna
A., Bolla, B., Marra, M., Hillier, L., Kucaba, T., Martin, J., Beck, C.
Wylle, T., Underwood, K., Steptoe, M., Theising, B., Allen, M., Bowers
, Y., Person, B., Swaller, T., Gibbons, M., Pape, D., Harvey, N., Schurk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Spermatophyta; Magnoliophyta; Edbaceae; Papilionoldeae; Phaseoleae; Posidae; eurosids I; Fabales; Fabaceae; Papilionoldeae; Phaseoleae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     sf17e03.yl Gm-c1028 Glycine max cDNA clone GENOME SYSTEMS CLONE ID:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                High quality sequence stop: 409
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Washington University School of Medicine
4444 Forest Park Parkway, Box 8501, St. Louis, MO 63108,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Public Soybean EST Project
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Contact:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Unpublished (1999)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Glycine max
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AW234631.1 GI:6567004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AW234631
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gm-c1028-245 5', mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AW234631
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Insert Length: 960
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Info@genomesystems.com web site: www.genomesystems.com
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TTGATTACTTTCCAGAGTACCAAACAGAAGATGGAACTGTAAGCGATAAACGAAGTATCA 1860
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TIGGGAAGTCCTTTGAAAATCGCCCTTGGAATGCTAGAGGAGAATNTATTGGTGAATGAC 422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AGGATATGTTGAGAAGCTTTCTCTTTAATGGAGTCGATGAACTTGGAAGCAAAACATTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (bases 1 to 410)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            314 286 1800
314 286 1810
                                                     /note-"Vector: pBluescript II XR; Site_1: EcoRI; Site_2: XhoI; The mRNA was isolated from roots of Glycine max 'Supernod' plants generously donated by Dr. Gary Stacey. The seedlings were innoculated with Bradyrhizobium japonicus, strain USDA110 priot to harvest. Stratagene's CDNA synthesis Kit (catalog number 200401) was used to synthesize the CDNA. First-strand synthesis was performe with 5-methyl dCTP, hence the ligated CDNA was feminethylated. A modification of Stratagene's
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Shoemaker R/Public Soybean
first-strand synthesis primer was used. nucleotide (V=A,C, or G) was added to the
                                                                                                                                                                                                                                                                                                                                                  /tissue_type="roots of 'Supernod' plants"
/lab_host="DH10B"
                                                                                                                                                                                                                                                                                                                                                                                                                     /clone="GENOME SYSTEMS CLONE ID: Gm-c1028-245"
/clone_lib="Gm-c1028"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /organism="Glycine max"
/db_xref="taxon:3847"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Std Error: 0.00
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          410 bp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EST Project
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Cardenas, M., McCann
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             EST 17-JUL-2000
   end of the
                                                                                                                           performed
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   362
```

```
BQ999997
LOCUS
                                                                               FEATURES
                                                                                                                                                                                                                                                                                                   JOURNAL COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   BASE COUNT
                                                                                                                                                                                                                                                                                                                                                                      TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Matches 117;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1741 AGGAGCTGCTAAGGGATTTCCTGTTCAATGGGGTGGATGAGTTAGGCACAAAAACATTCA 1800
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         243
                                                                                                                                                                                                            Department of Vegetable Crops, R.W.Michelmore University of California at Davis (UCD) Asmundson Hall, UCD, Davis, CA 95616, USA
                                                                                                                                                                                                                                                                                                                                                Kozik, A., Michelmore, R.W., Knapp, S., Matvienko, M., Rieseberg, L., Lin, H., van Damme, M., Lavelle, D., Chevaller, P., Ziegle, J., Ellison, P., Kolkman, J., Slabaugh, M.S., Livingston, K., Zhou, Y., Lai, Z., Church, S., Jackson, L. and Bradford, K.
Church, S., Jackson, L. and Bradford, K.
Lettuce and Sunflower ESTs from the Compositae Genome Project
                                                                                                           Email: akozik@atgc.org [michelmore@vegmail.ucdavis.edu] singleton, see http://cgpdb.ucdavis.edu/ for details.
                                                                                                                                                                                                                                                                                       Contact: Alexander Kozik [R.W.Michelmore
                                                                                                                                                                                                                                                                                                                     http://compgenomics.ucdavis.edu,
Unpublished (2002)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Lactuca sativa
Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots;
Asteridae; euasterids II; Asterales; Asteraceae; Lactuceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           EST
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           вQ999997
QGG23K04.yg.abl QG_EFGHJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       QGG23K04, mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Lactuca sativa.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             BQ999997.1 GI:22434393
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TTGGGAAGTCATATGAAACTCGTCCATGGGATTTAACAGGACAATTTA 1908
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TTGATTACTTTCCAGAGTACCAAACAGAAGATGGAACTGTAAGCGATAAACGAAGTATCA 1860
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AGGATATGTTGAGAAGCTTTCTCTTTAATGGAGTCGATGAACTTGGAAGCAAAACATTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (bases 1 to 701)
                                                                                                                                                                         1-(530)-742-1742
1-(530)-752-9659
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative
                                                                                                   QGG23
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        primer [GAGAGAGAGAGAGAGAGAGAGACTAGTCTCGAG(T)18V] to anchor the primer at the 5' end of the poly(A) tract. After second-strand synthesis, the cDNA ends were filled in with cloned Pfu DNA polymerase, ligated to EcoRI adapters and subsequently phosphorylated. The XhoI site within the first-strand synthesis primer was then restricted by digestion with XhoI; all xhoI sites in the cDNA would be protected by their hemimethylated status. The cDNA constructs were size-fractionated with a 500bp cutoff, using GibcoBRI Life Technologies' cDNA Size Fractionation column. The column eluent was then ligated into stratagene's pBluescript II XR Predigested vector (pBluescript II SK(+) that has been digested with EcoRI and XhoI, and phosporylated by Stratagene). Both the white and blue colonies appear to contain recombinant plasmids with cDNA inserts, based on size (n=25). This library was constructed by Dr. Paul Keim and Dr. Virginia Coryell."
/organism="Lactuca sativa"
/cultivar="L.serriola"
                                                                        Location/Qualifiers
                                                                                                   row:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  4.08;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                63 c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 86.4; DB 10
Pred. No. 1.6e-10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         95 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      lettuce serriola Lactuca sativa cDNA clone
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    701 bp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Mismatches
                                                                                                 04.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              111 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DB 10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 410;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            EST 22-AUG-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    0
```

δã В δÃ 밁

Ş

밁

```
COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RESULT 11
BE059899
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Locus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   BASE COUNT
                                                                                                                                                                                                                                                                              JOURNAL
                                                                                                                                                                                                                                                                                                      TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                            AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Matches 112;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1306 CATAAGGCTTTGTTCTCTGCGTTTCTAGAGTACTATCAGGTAT 1348
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1186 ATGACTGATCTTGAGATTTATTTGCAGACTTTCCCATGGGGAGAGAATTGACTGGTGAA 1245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1246 TCCATAAAGTTTTTCTCGCCTTTGGTGATGTGGACTAGGTTTTCGTCTAGCAAAAAAA 1305
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      568 CACAATATATTGTTTTCCGCTTTCAAAGATTACTACCAGGCAT 610
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              448
Seq primer:
                                 This clone is available through: ResGen, Invitrogen Corp. South Memorial Parkway Huntsville, AL 35801 For further in call: (800)-533-4363 or contact via email: ccu@resgen.com
                                                                                                                                   4444 Forest Park Parkway,
Tel: 314 286 1800
Fax: 314 286 1810
                                                                                                                                                                          Washington University School of Medicine 4444 Forest Park Parkway, Box 8501, St. 1
                                                                                                                                                                                                                                                                                                                              1 (bases 1 to 372)
Shoemaker, R., Keim, P., Vodkin, L., Erpelding, J., Coryell, V., Khanna A., Bolla, B., Marra, M., Hillier, L., Kucaba, T., Martin, J., Beck, C., Wylle, T., Underwood, K., Steptoe, M., Theising, B., Allen, M., Bowers, Y., Person, B., Swaller, T., Gibbons, M., Pape, D., Harvey, N., Schurk, R., Ritter, E., Kohn, S., Shin, T., Jackson, Y., Cardenas, M., McCann
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   BE059899 372 bp mRNA linear sn38e12.y1 Gm-c1016 Glycine max cDNA clone GENOME Gm-c1016-13799 5' similar to SW:YCP3_SYNPY Q02190
                                                                                                                                                                                                                            Contact: Shoemaker R/Public Soybean Public Soybean EST Project
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae; eurosids I; Fabales; Fabaceae; Papillonoideae; Phaseoleae
                     Insert Length: 105
                                                                                                                                                                                                                                                                            Unpublished (1999)
                                                                                                                                                                                                                                                                                               ,R., Waterston,R. and Wilson,R. Public Soybean EST Project
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Glycine max
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           EST
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            BE059899.1 GI:8404265
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   soybean.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    BE059899
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  KD PROTEIN IN CPEB 3'REGION ;, mRNA sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TCGTTGAAATTTTTTTCACCAATTGTGATATGGACAAAGTTTTCTTCAAGCCAAGAAAAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ATTCCTCTTGGTGTCAAGTACTCTGAGCTTTTGCCATGGGGAGGAAAACTCACTAGTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   213
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                              est@watson.wustl.edu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /note="Vector: pBrcDNASfiAB; The library was constructed from 10 different sources of RNA from a single genotype. Separate cDNAs were generated using primers that incorporated unique 5' and 3' tags to distinguish each source of RNA, cDNAs were then pooled, size-fractionated, directionally cloned into a custom medium-copy vector and transformations made with four size classes to minimize size bias. Details of each source of RNA and library construction can be obtained at http://cgpdb.ucdavis.edu/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TAG_LIB-QG_EFGHJ lettuce serriola TAG_TISSUE=flowers pre-fertilized
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TAG_SEQ-GCTTGACGGG"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /clone_lib="QG_EFGHJ lettuce serriola"
/lab_host="E.coli"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /clone="QGG23K04"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /db_xref="taxon:4236"
  -40RP from Gibco
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   3.8%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              151 c
                Std Error: 0.00
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 81.4; DB 14; Pred. No. 3.2e-09; D; Mismatches 51;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              124 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              213 t
                                                                                                                                                                                                                                                 EST Project
                                                                                                                                                                            Louis, MO 63108, USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length 701;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     EST 03-DEC-2001
SYSTEMS CLONE ID:
HYPOTHETICAL 29.3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0,
                                                           information
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Phaseoleae,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                      Beck, C.
                                                                                                                                                                                                                                                                                                                                                                                                                              Khanna
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            567
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  507
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0;
```

sequence stop:

```
RESULT 12
BM038189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ωy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FEATURES
                                                                                                   FEATURES
                                                                                                                                                                                                                                                                                                                                                                        COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                      TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Matches 106;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1801
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1741 AGGAGCTGCTAAGGGATTTCCTGTTCAATGGGGTGGGATGAGTTAGGCACAAAAACATTCA 1800
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         336
                                                                                                                                                                                                                           1 (bases 1 to 519)
1 (pages 1)
2 (pages 1)
2 (pages 1)
3 (pages 1)
3 (pages 1)
4 (pages 2)
4 (pages 2)
4 (pages 2)
5 (pages 2)
6 (pages 2)
6 (pages 2)
6 (pages 2)
7 (pages 2)
7 (pages 2)
7 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
8 (pages 2)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            BM038189 519 bp mRNA linear EST 06-NOV-200 U005B12 Oryza sativa mature leaf library induced by M.grisea Oryza sativa cDNA clone U005B12, mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Magnoliophyta; Liliopsida; Poales; Poaceae; Ehrhartoideae; Oryzeae; Oryza.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Oryza sativa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Oryza sativa.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EST
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                вм038189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     BM038189.1
                                                                                                                                                                                                   Fax: 0086-571-86961525
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TTGATTACTTTCCAGAGTACCAAACAGAAGATGGAACTGTAAGCGATAAACGAAGTATCA 1860
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TTGGGAAGTCCTTTGAAAATCGCCCTTGGAAT 367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TTGGGAAGTCATATGAAACTCGTCCATGGGAT 1892
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AGGATATGTTGAGAAGCTTTCTCTTTAATGGAGTCGATGAACTTGGAAGCAAAACATTCA
                                                                                                                               il: htdong@zjuem.zju.edu.cn
primer: M13 forward primer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    130
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /note="vector: pBluescript II XR; Site_1: EcoRI; Site_2: XhOI; This cDNA library was constructed from mRNA isolated from immature flowers of field grown plants. The cDNA library was prepared using the Stratagene pBluescript II XR library construction kit. Complementary DNA was synthesized from mRNA using a primer consisting of a poly (dT) sequence with a XhOI restriction site. EcoRI adapters were ligated to the blunt-ended cDNA fragments followed by XhOI digestion. The cDNA fragments were directionally cloned into the EcoRI-XhOI restriction site of the pBluescript vector. The ligated cDNA fragments were transformed into XLIO-Gold host cells. This library was
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             constructed by Dr. Randy Shoemaker and Dr. John Ernelding."
/organism="Oryza sativa"
/db_xref="taxon:4530"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /organism="Glycine max"
/db_xref="taxon:3847"
/clone="cenome systems CLONE ID: Gm-c1016-13799"
/clone_lib="Gm-c1016"
                                                                                            Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /tissue_type="immature flowers of field grown plants"
/lab_host="XL10-Gold"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              3.6%;
69.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    61
c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Score 78.4; DB 10
Pred. No. 1.4e-08;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         81 g
                                                                                                                               primer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                100 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DB 10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               46;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             372;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             EST 06-NOV-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ğ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AZ128578/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT 13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               BASE COUNT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Focus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches 114;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          source
```

```
Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1861 TTGGGAAGTCATATGAAACTCGTCCATGGGATTTAACAGGACAATTTATCGGCTA 1915
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1801 TTGATTACTTTCCAGAGTACCAAACAGAAGATGGAACTGTAAGCGATAAACGAAGTATCA 1860
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1741 AGGAGCTGCTAAGGGATTTCCTGTTCAATGGGGTGGATGAGTTAGGCACAAAAACATTCA 1800
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           241 TGGATTATTTCCCTGAATACGCCCGTGATGATGGGTCAGTGAACAAGAAAAGGAGTATGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Clemson University
100 Jordan Hall, Cl
Tel: 864 656 7288
Fax: 864 656 4293
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             516 bp DNA linear GSS 02-JUN-20
OSJNBb0099G12r CUGI Rice BAC Library (EcoRI) Oryza sativa genomic
clone OSJNBb0099G12r, DNA sequence.
AZ128578
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Wing,R.A. and Dean,R.A.

A BAC End Sequencing Framework to Sequence the Rice Genome Unpublished (1998)
Contact: Wing RA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Magnoliophyta; Liliopsida; Poales; Poaceae; Ehrhartoideae; Oryzeae; Oryza.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Oryza sativa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             High quality sequence start: High quality sequence stop: 4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Seq primer: GGAAACAGCTATGACCATGClass: BAC ends
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Clemson University Genomics Institute
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Oryza sativa.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AZ128578.1 GI:8205983
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Email: rwing@clemson.edu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TCGGCAAGTCTTTTGAAACTAGGCCTTGGGACCCCCATGGAGAATTCATTGGCGA 355
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AGGATCTGGTGATGGAGTTTCTGTTTGAAGGAGTAAATACTCTTGGAACAAAATCATTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (bases 1 to 516)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              164
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 þ
          /note="Vector: pBACIndigo; Site_1: EcoRI; Site_2: EcoRI; Rice is the most important food crop in the world. Half of the world population, especially those inhabiting highly populated areas of the humid tropics and subtropics, rely on rice as their primary source of carbohydrate. With a Monocotyledonous rice is a diploid plant (2n=24). With a haploid genome equivalent of 431 Mbp (Arumuganathan and Earle, 1991). The relatively small genome of rice, three times larger than that of Arabidopsis, makes it suitable
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /tissue_type="leaf"
/dev_stage="Mature stage"
/note="Vector: pSport2"
95 c 109 g 150
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               M.grisea"
                                                                                                                                                                                                                                                                                                                                                        /organism="Oryza sativa"
/strain="Japonica"
/cultivar="Nipponbare"
/db_xref="taxon:4530"
                                                                                                                                                                                                                                                     /tissue_type="Leaf"
/lab_host="E. coli DH10B"
                                                                                                                                                                                                                                                                                                   /clone="OSJNBb0099G12r"
/clone_lib="CUGI Rice BAC Library (EcoRI)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /clone_lib="Oryza sativa mature leaf library induced by
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  .516
genomic studies.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           3.6%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Clemson,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0,:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score 77.4; DB 13
Pred. No. 2.8e-08;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SC 29634, USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               487.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              150 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DB 13;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     61;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 519;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GSS 02-JUN-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0,
```

```
JOURNAL
COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RESULT 14
BE940987
LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
                                                                                                                                                                                                                              source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              COUNT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1795 CATTCATTACTTTCCAGAGTACCAAACAGAAGATGGAACTGTAAGCGATAAACGAA 1854
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1735
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1855 GTATCATTGGGAAGTCATATGAAACTCGTCCATGGGATTTAACAGGA 1901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  107
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        47
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        110;
                                                                                                                                                                                                                                                              Email: hahn@corc.uga.edu
University of Georgia name: G268839e TIGR sequence name: MTJAB94TK
More information is available at: http://chrysie.tamu.edu/medicago
Seq primer: SKmod (CTA gAA CTA gtg gAT CC).
                                                                                                                                                                                                                                                                                                                                                                                                     University of Georgia
220 Riverbend Road, Athens, GA 30602-4712, USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae; eurosids I; Fabales; Fabaceae; Papilionoideae; Trifolieae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                          Complex Carbohydrate Research Center
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Unpublished (2000)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Cote, F., Ojanen-Reuths, T., Hahn, M.G., VandenBosch, K., Hur, J., Beremand, P., Endre, G., Town, C.D., Bowman, C.L., Craven, M.B. an
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Contact: Michael G. Hahn
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Medicago truncatula
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   BE940987.1 GI:10518746
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EST420566 MGHG Medicago truncatula
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      barrel medic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAAATCAGGAGCTGCTAAGGGATTTCCTGTTCAATGGGGTGGATGAGTTAGGCACAAAAA 1794
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ACAATCAGGATCTGGTGATGGAGTTTCTGTTTGAAGGAGTAAATACTCTTGGAACAAAAT 108
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CATTTCTGGATTATTTCCCTGAATACGCCCGTGATGATGGGTCAGTGAACAAGAAAAGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GTATGATCGGCAAGTCTTTTGAAACTAGGCCTTGGGACGCCAATGGA 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     bases 1 to 547)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           171
                                                                                                                                                                                                                                                                                                                                                                     706-542-4457
706-542-4412
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       beta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      from seedling roots of Medicago truncatula after treatment
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Fraser, C.M.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 cloning, physical mapping and genome sequencing of rice, we have constructed a BAC library from Oryza sativa, Nipponbare variety using EcoRI as the cloning enzyme. The library contains 55,296 clones with an average insert size of 121 Kb providing approximatley 15 haploid genome equivalents. The deep coverage allows the isolation a particular sequence with a probability of 99 9 %. Three high density filters, each containing 18,432 clones (doubly spotted), represent the whole library for colony screening and can be requested from the Clemson University BAC/EST Resource Center (www.genome.clemson.edu)."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Q
                                                                                                                       /organism="Medicago truncatula"
/cultivar="Al7"
/db_xref="taxon:3880"
/cione="pMGHG-2020"
/tissue_type="Roots from four day old seedlings"
/dev_stage="2 days after treatment with beta glu
elicitor preparation from Phytophthora sojae"
/lab_host="E. coli strain XLOLR"
                                                                                                   /clone_lib="MGHG"
                                                                                                                                                                                                                                             Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  glucan
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          3.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             elicitor preparation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 75.8; DB
Pred. No. 7e-08;
0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             547 bp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CDNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 57;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              17;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  from
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               linear EST 03-OCT-2000 clone pMGHG-2020, mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Phytophthora sojae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 516;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0.
                                               glucan
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          48
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0;
```

밁 Q. В δÃ 망 Ş

> 밁 Q В δÃ 밁 Ş

BASE CO

FEATURES

j

/note="Vector: pBluescript II SK+;

NIL was

constructed

Site\_1:

and seed was provided

EcoRI; Site\_2:

TITLE

```
FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ACCESSION
VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT 15
BE611353
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            BASE COUNT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local
                                                                                                                                                                             source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1827
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1887 TGGGATTTAACAGGACAATTTATCGGCTAA 1916
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 102;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    61
                                                                                                                                                                                                                                        Email: est@watson.wustl.edu
This clone is available through: ResGen, Invitrogen Corp.
South Memorial Parkway Huntsville, AL 35801 For further in
call: (800)-533-4363 or contact via email: ccu@resgen.com
                                                                                                                                                                                                                                                                                                                                            4444 Forest Park Parkway, Box 8501, St. Louis, MO 63108, USA
Tel: 314 286 1800
Fax: 314 286 1810
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Shoemaker, R., Keim, P., Vodkin, L., Erpelding, J., Coryell, V., Khanna, A., Bolla, B., Marra, M., Hillier, L., Kucaba, T., Martin, J., Beck, C. Wylle, T., Underwood, K., Steptoe, M., Theising, B., Allen, M., Bowers, Y., Person, B., Swaller, T., Gibbons, M., Pape, D., Harvey, N., Schurk, R., Ritter, E., Kohn, S., Shin, T., Jackson, Y., Cardenas, M., McCann
                                                                                                                                                                                                                                                                                                                                                                                                            Public Soybean EST Project Washington University School of Medicine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 BE611353
BE611353
BE611353
BE611353
BE611353
BE611353
BE611353
BE706-C1048 Glycine max CDNA CLONE GENOME SYSTEMS CLONE ID:
Gm-c1048-1729 5' similar to SW:YCP3_SYNPY Q02190 HYPOTHETICAL 29.3
EMPROTEIN IN CPEB 3'REGION ;, mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1 AACGGAGTCGATGAACTATGAAGCAAAACTTTCAATGACTATTTTCCTCATTACCACGGC 60
                                                                                                                                                                                                                         High quality sequence stop: 330.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Contact: Shoemaker
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Unpublished (1999)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ,R., Waterston,R. and Wilson,R. Public Soybean EST Project
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Glycine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Eukaryota; Vir. Spermatophyta;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Glycine max
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 BE611353.1
EST.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 BE611353
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Rosidae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GAAGATGGAACTGTAAGCGATAAACGAAGTATCATTGGGAAGTCATATGAAACTCGTCCA 1886
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GAGGAAGGAACTGTAAATAAGAAAGGTGGTATTGCTGGGAAGTCTTTTCCAAATTGTCCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AATGGGGTGGATGAGTTAGGCACAAAAAACATTCATTGATTACTTTCCAGAGTACCAAACA 1826
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TGGGATGCAAGCGGAAAATTCCTTGGTCAA 150
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (bases 1 to 645)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         164
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ۵

    a; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
    phyta; Magnoliophyta; eudicotyledons; core eudicots;
    eurosids I; Fabales; Fabaceae; Papilionoideae; Phaseoleae;

                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          // note="Vector: pBluescript SK-; Site_1: EcoRI; Site_2: XhOI; CDNA was prepared from polyA+ enriched RNA. The cC was directionally ligated into the Unizap XR vector from Stratagene and packaged using Gigapack III Gold packagi extracts. Plasmids containing cDNA inserts were excised from the recombinant lambda-Zap phage using Ex-assist helper phage and propagated in XLOLR cells."
/tissue_type="whole seedlings of
/dev_stage="1 week old"
/lab_host="DH10B"
                                                                       /clone="GENOME SYSTEMS CLONE ID:
/clone_lib="Gm-c1048"
                                                                                                                        /organism="Glycine max"
/db_xref="taxon:3847"
                                                                                                                                                                                             ocation/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GI:9902385
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   3.4%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 R/Public Soybean EST Project
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 73.2; DB 12; Pred. No. 3.1e-07; ); Mismatches 48;
                                              greenhouse grown
                                                                                                 Gm-c1048-1729
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               547;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0;
                                                                                                                                                                                                                                                                    information
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                           plants"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                packaging
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Beck,C.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CDNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0;
```

```
BASE COUNT
ORIGIN
Search completed: June 24, 2003, 14:16:57 Job time: 2055 secs
                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
Best Local Similarity
Matches 97; Conserv
                                                                                                                                                                                                   1329 TCTAGAGTACTATCAGGTAT 1348
                                                                                                    127 TAGGGAATATTACAAGGTAT 146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        215
                                                                                                                                                                                                                                                                                                                                                                                                                 3.3%; Score 71.2; DB 10; Length 645; ilarity 69.3%; Pred. No. 1e-06; Conservative 0; Mismatches 43; Indels 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           by Dr. J. Specht, University of Nebraska (Shoemaker and Specht, 1995). The cDNA library was constructed from mRNA isolated from whole seedlings of 1 week old greenhouse grown plants. Complementary DNA was synthesized from mRNA using a primer consisting of a poly(dT) sequence with a XhoI restriction site and a 3' anchor. EcoRI adapters were ligated to the blunt-ended cDNA fragments followed by XhoI digestion. The cDNA fragments were directionally cloned into the EcoRI-XhoI restriction site of the pBluescript vector. The ligated cDNA fragments were transformed into DH10B host cells (GibcoBRL). The library was constructed in cooperation with Dr. Paul Keim's laboratory at Northern Arizona University."
                                                                                                                                                                                                                                                                                                                                                                                                                    0;
                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                 0,
```

В Š В

밁 γQ

				, 15, 4,	
9	* ************************************				
ı					
			*		
M.	-	•	\$ or		
.4					
ā .			3.* 1.*		
Ar k		***		÷ .	
		en 2			
		**			
				u.	
		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			
				± 2	
•		<i>*</i>			
gar <sup>a</sup>			\$.	1 - "	
		· · · · · · · · · · · · · · · · · · ·	2 5 5 6 mm 31		
(N) 				£.	
	Y .		Contraction of		
		/* · /*			
4					
		·			
•					
· ·					
17 -		· · · · · · · · · · · · · · · · · · ·			
<i>y</i> -			•		
es.					
	*				
: :200	•		e .		
· /					
			•		
e P				,	
<b>.</b>			- 12	· "	
n.					
*1					
		*		į.	
				1	
·				A CANADA AND A CANADA	ķ.

```
Database :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Minimum DB seq length: 0
Maximum DB seq length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Post-processing: Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Word size :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               OM nucleic - nucleic search, using sw model
  Pred. No.
is the number of results predicted by chance to have a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         OLIGO_NUC Gapext 60.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   June 24, 2003, 14:18:39; Search time 3711 Seconds
(without alignments)
16939.386 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-09-870-406A-32
2160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2054640 seqs, 14551402878 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1 gaattccccacgtcaacgtg......tcgtctctacctaatcaaca 2160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GenEmbl:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GenCore version 5.1.6 Copyright (c) 1993 - 2003 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                              gb_pr:*
gb_ro:*
gb_sts:*
gb_sy:*
gb_un:*
gb_vi:*
em_ba:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         gb_ba:*
gb_htg:*
gb_in:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   gb_pat:*
gb_ph:*
gb_pl:*
                          em_htgo_hum:*
em_htgo_mus:*
em_htgo_other:*
                                                                                                                                                                                                                                                                                                                em_mu:*
em_on:*
em_or:*
                                                                                                                                                                                                                                                                                                                                                                      em_fun:*
em_hum:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1b_om:*
                                                                                                               em_htg_pln:*
em_htg_rod:*
                                                                                                                                           em_htg_other:*
em_htg_mus:*
                                                                                                                                                                       em_htg_hum:*
em_htg_inv:*
                                                                                                                                                                                                                             em_sts:*
                                                                                                                                                                                                                                                                        em_ph:*
                                                                                                                                                                                                                                                                                     em_pat:*
                                                                                                                                                                                                                                                                                                    em_ov:*
                                                                                                                                                                                                                                                                                                                                                            em_in:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                b_ov:*
                                                                                    em_htg_vrt:*
                                                                                                 em_htg_mam:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    4109280
```

score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

## SUMMARIES

44 45	4.	c 41	. 4	c 39	. د	υ	c 35	w	ω	32	ب د د	٠,	c 28	27	c 26	N	24	N	c 22	21	20	10	17	c 16	15	c 14	_	_	c 11	_	0		6	S	4	ω	2	1	Result
21 21	21	21	21	21	2 2	21	21	21	21	21	21	2 2	21	21	21	21	21	21	21	21	21	21	2 2	21	. 22	22	22	22	22.8	) K	23	26	278	318	381	40	2160	2160	Ĥ
1.0		1.0	•		•								٠		٠		٠	٠				- L	•	٠					1.0		•	1.2		٠	7	8		0.0	uery latch
L85945 L98005	(4) C	83544	178106	177063	J ~	ı ~ı	•	$\alpha$	an a	4 n (	п ф		1	N)	119926	119012	92495	85907	64120	55411	39634	л # 7 0 0	1303	1011	228443	221729	176725	170821	165720	101305	2674	85561	1092	1308	1337		106688	~	ngth
<b>∞</b> Ν																												10	10	35	10							œ	DB
AC120940 ATCHRIV28	2	AC094064 AC112631	17	AC069211	AC125144	1 1 2	0	Η	8	1:	<b></b> •	:Ε	131	216	AC123166 .	AC094304	ŧл	ATF28M11	AL445646	AC100139	AF045641	ათ	AY051037		AC125049		5692	4.	AL732475	\$1663036	·	a	AY128900	AY088874	AB045112	AY099706	TAC01	TAC009	
<u>~</u>	124842	AC094064 Rattus no	7654 Rattus n	6921	- 0	56421 Human DN	274	6 Ratt	254	7 Ratt	16316 Pattus	07591 Arabido	31121	2160 Medicaç	6 Rattus	4	_	Arabic	5 Huma	9 Mus	AF045641 Caenorhab	002/5 Arabidop	051037	F013368	25049 Mus	844855 Mus	Mus mus	Mouse	AI.732475 Mouse DNA	IG-A-SY	avia	5	128900	088874 Ara	045112 Ara	099706 Ara	011436 Ara	009326 A	escription

## ALIGNMENTS

REFERENCE AUTHORS		ORGANISM	SOURCE	KEYWORDS	VERSION	ACCESSION		DEFINITION	LOCUS	ATACO09326	
<pre>1 (bases 1 to 85561) Lin, X., Kaul, S., Town, C.D., Benito, MI., Creasy, T.H., Haas, B.,</pre>	Bukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Magnoliophyta; eudicote; core eudicots; Rosidae; eurosids II; Brassicales; Brassicaceae; Arabidopsis.	Arabidopsis thaliana	Arabidopsis thaliana.	HTG.	AC009326.8 GI:12408713	AC009326 .	complete sequence.	Arabidopsis thaliana chromosome III Pl MZB10 genomic sequence,	ATAC009326 85561 bp DNA linear PLN 24-JAN-2001		

```
FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TITLE
JOURNAL
REFERENCE
AUTHORS
TITLE
JOURNAL
                                                                          misc_feature
                                                                                                                                  misc_feature
                                                                                                                                                                            misc_feature
                                                                                                                                                                                                                                       misc_feature
                                                                                                                                                                                                                                                                              misc_feature
                                                                                                                                                                                                                                                                                                                     misc_feature
                                                                                                                                                                                                                                                                                                                                                                              misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                     misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (http://www.cbs.dtu.dk/netpgene/cbsnetpgene.html), searches of the complete sequence against a peptide database and the Arabidopsis that a peptide database and the Arabidopsis their annotated genes are named to indicate the level of evidence for after the database hits. Genes with similarity to other proteins are named similarity but with EST similarity are named as 'unknown' proteins than two gene prediction programs over most of their length are named as 'uppothetical' proteins. Genes with serious day, that are predicted by trNAscan-SE (Sean Eddy, here).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               exons
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      identified by repeatmasker (Arian Smit,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Genes were identified by a combination of three methods: Gene prediction programs including GRAIL (available by anonymous ftp arthur.epm.ornl.gov), Genefinder (Phil Green, University of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Washington), Genscan (Chris Burge,
http://gnomic.stanford.edu/-chris/GENSCANW.html), and NetplantGene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 molecular marker CIC7A12.
The orientation of the sequence is from SP6 to T7 end of the P1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      e-mail: xlin@tigr.org
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Rockville,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Direct Submission
Submitted (24-JAN-2001) The Institute for Genomic Research,
Medical Center Dr., Rockville, MD 20850, USA
On Jan 24, 2001 this sequence version replaced gi:12280842.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Xiaoying Lin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Submitted (16-AUG-1999) The Institute for Genomic Research, Medical Center Dr. Rockville, MD 20850, USA, xlin@tigr.org 3 (bases 1 to 85561)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ronning,C.M., Koo,H., Fujii,C.Y., Utterback,T.R., Barnstead,M. Bowman,C.L., White,O., Nierman,W.C. and Fraser,C.M. Arabidopsis thaliana chromosome III pl MZB10 genomic sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        clone MZB10 is from Arabidopsis chromosome III and is near the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ://ftp.genome.washington.edu/RM/RepeatMasker.html). Regions of nic sequence that are not annotated as genes but have predicted by GRAIL are annotated as misc features.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      //genome.wustl.edu/eddy/tRNAscan-SE/). Simple repeats are
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Institute for Genomic Research
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Medical Center Dr.
ville, MD 20850, USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (bases 1 to 85561)
                                                                                //OCCe="exon predicted by xgrail, quality marginal"
/note="exon predicted by xgrail, quality
marginal_shadowexon"
             complement(1852. .1922)
/note="exon predicted by xgrail, quality good_shadowexon"
                                                                                                                                                                                                            /note="exon predicted by xgrail, quality marginal"
complement(1516. .1602)
                                                                                                                                                  /note="exon
                                                                                                                                                                                                                                                                                                          /note-"exon predicted by xgrail, quality excellent" (complement(587, 681) /note-"exon predicted by xgrail, quality excellent, shadowexon"
                                                                                                                                                                                /note="exon predicted by xgrail, quality
                                                                                                                                                                                                                                                                 /note="exon predicted by xgrail, quality
1508. 1606
                                                                                                                                                                                                                                                                                                                                                                                                                                                                /db_xref="taxon:3702"
/chromosome="III"
                                                                                                                                                                                                                                                                                                                                                                                                                                'Clone="MZB10"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /organism="Arabidopsis thaliana"
/cultivar="Columbia"
                                                                                                                                                                                                                                                                         good"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Barnstead, M.E.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          9712
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             9712
                                                                                         CDS
                                                                                                                                                    mRNA
                                                                                                                                                                                                                                gene
                                                                                                                                                                                                                                                                                                                              misc_feature
                                                                                                                                                                                                                                                                   repeat_region
                                                                                                                                                                                                                                                                                                                                                                   misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                              misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                misc_feature
'note="hypothetical protein"
'codon_start=1
                                     'gene="MZBl0.3"
                                                                                             /gene-"MZB10
                                                                                                                                                                                                                                                                                                                                                                                             /note="exon predicted by xgrail, quality excellent" complement(5641. 5725) /note="exon predicted by xgrail, quality excellent, shadowexon" complement(6084. 6095)
                                                                              oin(6920
                                                                                                                                                          [haliana]
                                                                                                                                                                                                                                                            /note="exon predicted by xgrail, quality
excellent_shadowexon"
complement(6632 6705)
                                                                                                                                                                                                                                                                                             /note="exon predicted by xgrail, quality excellent" complement(6418. .6474)
                                                                                                                                                                                                                                                                                                                                                                 marginal_shadowexon" guality 6393. .6476
                                                                                                                                                  note="similar to unknown protein GB:AAB95292 [Arabidopsis
                                                                                                                                                                                                 gene="MZB10.3"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        margina
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     complement(5490, .5586)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /Product="Yippee-like protein"
/protein_id="AAD56315.1"
/protein_id="AAD56315.1"
/db_xref="GI:5923664"
/translation="McRIFFVIDLEGLVYSCKYCQTHFAVTNDIISKSFHCKHGRAYLF
DNVYNVTVGEKEHRVMITGWHTVADIFCVSCGSLVGWKYEIAYDKSQKYKEGKFILER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /note="exon predicted by xgrail, quality marginal_shadowexon"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /note="similar to Yippee putative zinc binding protein GB:AAD47882 [Homo sapiens]"
join(<4496. .4591,5070. .5113,5199. .5307,5386. .>5463)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /note="exon predicted by xgrail, quality marginal_shadowexon"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        'gene-"MZB10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            )oin(4496.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /gene="MZB10.2"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             complement(3872.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          "Note="exon predicted by xgrail, quality marginal_shadowexon"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      complement(3372.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /note="exon predicted by xgrail, quality marginal_shadowexon"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              complement(3284.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /translation="MGIONILWQVAKKSFTGSIIGLTISDRCCSVVPVRGDSMSPTFNPQRNSYLDDYVLVDKFCLKDYKFARGDVVVFSSPTHFGDRYIKRIVGMBGEWISSSRD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      'note="exon
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              VIRVPEGHCWVEGDNKTSSLDSRSFGPIPLGLIOGRVTRVMWPPQRISKIGR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /Potce "similar to MITOCHONDRIAL INNER MEMBRANE PROTEASE SUBUNIT 2 GB:P46972 [Saccharomyces cerevisiae] poin(<2185, .2338,2432. .2504,2922. .3081,3204. .>3281)
                                                                                                                                         (<6920.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /product="putative signal peptidase"
/protein_id="AAD56314.1"
/db_xref="GI:5923663"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      'product="
                                                                                                                                                                                                                                  _family="(GA)n"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /gene="MZB10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /note="exon predicted by xgrail, quality marginal"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            'gene="MZB10.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          lement(3922. .4055)
_family="(GAAAA)n"
                                                    .7010,7097. .7253,7541. .7646,7762. .8769.
                                                                                                                              .7010,7097.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          4591,5070 .5113,5199.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2338,2432. .2504,2922. .3081,3204. .3281)
                                                                                                                                                                                                                                                        . 6705)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      .3962)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   . 3486)
                                                                                                                       .7253,7541.
                                                                                                            .7646,7762. .8769,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    .5307,5386. .5463)
```

```
В
                20
                                          밁
                                                                    δÔ
                                                                                                      В
                                                                                                                       S
                                                                                                                                                 B
                                                                                                                                                                           γQ
                                                                                                                                                                                                  뫄
                                                                                                                                                                                                                            δõ
                                                                                                                                                                                                                                                       뫄
                                                                                                                                                                                                                                                                                Оy
                                                                                                                                                                                                                                                                                                                                   δ
                                                                                                                                                                                                                                                                                                                                                                    Query Match
Best Local Sim
Matches 2160;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                               gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            misc_feature
                                                                                                                                                                                                                                                                                                                  64324
                                                                                                                                                         64504
  64684
                                                                                                                               241
                                                                                                                                                                                   181
                                                                                                                                                                                                                                      121
                           361
                                                                                                                                                                                                                                                                                        61
                                                                                                                                                                                                                                                                                                                                                                                  Similarity
                                                                                                    GAATTCCCCACGTCAACGTGACTGTGCATTCCACGTGGCGGATGTGGGCCCTATAGTTGG
AACTGTGAAAATTTTATCTCTTTTATAGATAAAGAATCTTGCTTTTTTCAGTTTTCAGTA 180
                                                                                                                                                                                  TGAAGAAGAATTGAAGAGAGTGTCCGAGGAAGGAGACCTTTGGTTTCAGTTTGTGAGTCT
                                                                                                                                                                                                            AACTGTGAAAATTTTATCTCTTTTATAGATAAAGAATCTTGCTTTTTTCAGTTTTCAGTA
                                                                                                                                                                                                                                                                                                                GAATTCCCCACGTCAACGTGACTGTGCATTCCACGTGGCGGATGTGGGCCCTATAGTTGG
                                                                                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                 /gene="MZB10.4"
/codon_start=1
/codon_start=1
/product="putative receptor ser/thr protein kinase"
/protein_id="AaD56317.1"
/protein_id="AaD56317.1"
/db_xref="c1:5923666"
/translation="MCNGSDRLGQREAEEICTNNVRVFSYNSLRSATDSFHPTNRIGG
GGYGYVFKGYLRDGTQYAVKSLSAESKQGTREFLTEINLISNIHHPNLVKLIGCCIEG
NNRILVYEYLENNSLASVLLGSRSRYVPLDWSKRAAICVGTASGLAFLHEEVEPHVVH
RDIKASNILLDSNFSPKIGDFGLAKLFDNNYHYGTRVAGTVGYLAPEYALLGQLTKK
ADVSSGILVLEVISGNSSTRAAFGDEWNLVEWYWKLREERRLLECVDPELTKEPAD
EVTRFIKVALFCTQAAAQKRPNMKQVMEMLRKELNLNEDALTEPGVYRGVNRGRNHR
GIGLRVGQGGSSQESSSTQRDKGKSSAVPQGSTSNSNISFQSITELAPR"
/gene="MZB10.5"
/note="similar to hypothetical protein GB:AAC27164
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /protein_id="AAD56316.1"
/db_xref="GI:5923665"
/db_xref="GI:5923665"
/translation="MLTHDRDEELSLFLEMRRREKEHRADSLLTGSDNVSINATLTAA
AAAALGGVSETASSQRY PLRETAAENFLYSENEKSDYDWLLTPPGTPQFEKESHRSVM
NQHDAPNSRPTVLKSRLGNCREDIVSGNNKPQTSSSSVAGLRRPSSGSSRSTSRPA
TPTRRSTTPTSTSRPVTTRASNSRSSTPTSRATLTAARATTSTAAPRTTTTSSGSAR
SATPTRASNPRPSSASSKPWKPPEMPGFSLEAPPULRTTLADRPVSASRGTSPSPTNNSLS
KAPSRGTSPSPTLNSSRPWKPPEMPGFSLEAPPULRTTLADRPVSASRGTSGSGCD
KAPSGSIERGGGPTSGGSGNARRQSCSPSFGRAPIGNTNGSLTGVRGRAKASNGGSGCD
ULSPVAMGNKHVERVVMRKKLGPPRLTENGGRGSGSSSSSAFNSLGVGRNLSKSSIDMA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /note="exon predicted <11221. .>12992
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  join(<11221...11263,11488...1
12298...12448,12597...>12992)
/gene="MZB10.4"
join(11221...11263,111488...11
12298...12448,12597...12992)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /note="similar to receptor
thaliana]"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           complement(10821. .10843)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     IRHMDIRRGMTGNLRPLVTKVPASSMYSVRSRPGSVSSSPVATSSTVSSSDPSVDNIN ILCLDGNEAENDDLLSERSYAASPRNQYPKFTS"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /gene="MZB10.4"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /note="exon predicted marginal_shadowexon"
                                                                                                                                                                                                                                                                                                                                                                               100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      .10857
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    21. .11263,11488. .11600,11690.
12448,12597. .12992)
                                                                                                                                                                                                                                                                                                                                                                               Score 2160;
Pred. No. 0;
                                                                                                                                                                                                                                                                                                                                                                    Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ьy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             by xgrail, quality
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      xgrail,
                                                                                                                                                                                                                                                                                                                                                                                              DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                kinase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       .11600,11690.
                                                                                                                                                                                                                                                                                                                                                                   0;
                                                                                                                                                                                                                                                                                                                                                                                           8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       quality
                                                                                                                                                                                                                                                                                                                                                                                           Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GB:S70769 [Arabidopsis
                                                                                                                                                                                                                                                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 .11900,11982.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      marginal"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       .11900,11982. .12219,
                                                                                                                                                                                                                                                                                                                                                                   0;
                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                240
                                                                                                                                                                                                            64503
                                                   64683
                                                                             360
                                                                                                      64623
                                                                                                                                                         64563
                                                                                                                                                                                                                                                                                                               64383
  64743
                           420
                                                                                                                               300
                                                                                                                                                                                                                                                              64443
                                                                                                                                                                                                                                                                                                                                          60
                                                                                                                                                                                                                                                                                                                                                                    0
                               δõ
                                                           망
                                                                                 Q
                                                                                                                망
                                                                                                                                    δÃ
                                                                                                                                                                   Вþ
                                                                                                                                                                                       δÃ
                                                                                                                                                                                                                    В
                                                                                                                                                                                                                                        γQ
                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                            δÃ
                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                Ş
                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                 δ
                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                    δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  뮹
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      뫄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ΩV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        뫄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Вb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ϋ́
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δδ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       . В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     δõ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               δÃ
                                                                                                                                                                                                                        65524
                                                                                                                                                                                                                                                                                                                             65404
                                                                                                                                                                                                                                                                                                                                                                                65344
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     65224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           65104
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    64924
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       64864
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          64804
                                                                                                                   65644
                                                                                                                                                                      65584
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         65164
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              65044
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 64984
                                                                                                                                          1321
                                                                                                                                                                                              1261
                                                                                                                                                                                                                                                  1201
                                                                                                                                                                                                                                                                                                   1141
                                                                                                                                                                                                                                                                                                                                                       1081
                                                                                                                                                                                                                                                                                                                                                                                                         1021
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     421
                                                               ACACCAAATTACTCAATTGCAAGTAAACCTAATGCTGAGGTGTAAATGACTGATCTTGAG
                                                                                                                                                                                                                                                                                                                           TTTAGAAGAAACCAGGAAAAGGATCGTTCTTGAACCTTCACATCTCCAGGTATATGCAAT
             AAGTGAGGGAGGAGATGGAACCATCTCATGTGAGAGCCAATTGTGAAGCACAACACAAGT
                                                                                                                             TCTGCGTTTCTAGAGTACTATCAGGTATATACTCAGCGGCCAAAAGCTAAGGTTTTATTG
                                                                                                                                                                                  TCGCCTTTGGTGATGTGGACTAGGTTTTCGTCTAGCAAAGAAAAACATAAGGCTTTGTTC
                                                                                                                                                                                                                                    ATTTATTTGCAGACTTTCCCATGGGGAGGGAAATTGACTGGTGAATCCATAAAGTTTTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TCTGTGCTAACTTTTTCACATCTACCAACGTTAACATAGTTGTATTGTAAGTTATCTTCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TCTTCGCTTAGGTCTTTGACTTTGCGGGTTTCATGGAGCCTGAGTATGATACTCCCATAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AAAGATTAGACTCTTGAGGAGTATGGCAATAGAGAATGAGACAATGCAGGTTTAACTTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAAGATTAGACTCTTGAGGAGTATGGCAATAGAGAATGAGACAATGCAGGTTTAACCTTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TACATTTCGTTAGTGTAGTGGGAGGATTATATTTCTCATTGTTTCTTGCTGTGAATTTTG
                                      AAGTGAGGGAGGAGATGGAACCATCTCATGTGAGAGCCAATTGTGAAGCACAACACAAGT 1500
                                                                                                                   TCTGCGTTTCTAGAGTACTATCAGGTATATACTCAGCGGCCAAAAGCTAAGGTTTTATTG
                                                                                                                                                                      TCGCCTTTGGTGATGTGGACTAGGTTTTCGTCTAGCAAAGAAAAAACATAAGGCTTTGTTC
                                                                                                                                                                                                                         ATTTATTTGCAGACTTTCCCATGGGGAGGGAAATTGACTGGTGAATCCATAAAGTTTTTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                              AGTTATGCTGGAGTTATCAGGTCTGTATTGTCCAAACTGATGTTCAATATTTTACTGTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TCTGTGCTAACTTTTTCACATCTACCAACGTTAACATAGTTGTAATTGTAAGTTATCTTCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TCTTCGCTTAGGTCTTTGACTTTGCGGGGTTTCATGGAGCCTGAGTATGATACTCCCATAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GGTAAATTGATTTGAGTTGTCATTAGGAACCAAACAAATAACTTTACTGTTATAGACTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TACATTTCGTTAGTGTAGTGGGAGGATTATATTTCTCATTGTTTCTTGCTGTGAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                   AGTTATGCTGGAGTTATCAGGTCTGTATTGTCCAAACTGATGTTCAATATTTTACTGTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                          1020
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      480
             65823
                                                                                         1440
                                                                                                                                          1380
                                                                                                                                                                                               1320
                                                                                                                                                                                                                                                                          65523
                                                                                                                                                                                                                                                                                                                             65463
                                                                                                                                                                                                                                                                                                                                                       1140
                                                                                                                                                                                                                                                                                                                                                                                65403
                                                                                                                                                                                                                                                                                                                                                                                                                                65343
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               960
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         65223
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           65163
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              65103
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    64983
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             660
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       64923
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  540
                                                               65763
                                                                                                                   65703
                                                                                                                                                                                                                        65583
                                                                                                                                                                                                                                                                                                                                                                                                         1080
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     65283
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            64803
                                                                                                                                                                      65643
                                                                                                                                                                                                                                                                                                    1200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 65043
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          720
```

BAC

```
JOURNAL REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             REFERENCE
AUTHORS
                                                                                                                                                                                                    REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   δÔ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VΩ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δõ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Дb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Б
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ATAC011436
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Б
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              KEYWORDS .
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δÃ
                                                                                                                              TITLE
                                                                                                                                                                                                                                                                           JOURNAL
                                                                                                                                                                                                                                                                                                            TITLE
                                                                                                                                                                                                                                                                                                                                             AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                     TITLE
                                                                                                                                                           AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   66424
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              66124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      65944
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               66244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        66184
4
                                                                                     Submitted
                                                                                                                                                                                         Submitted (06-OCT-1999)
Medical Center Dr, Rockv
3 (bases 1 to 106688)
                                                                                                                                                                                                                                                                                                                                  Lin, x.
                                                                                                                                                                                                                                                                                                                                                                                                                               Lin,X., Kaul,S., Town,C.D., Benito,M.-I., Creasy,T.H., Haas,B. Ronning,C.M., Koo,H., Fujii,C.Y., Utterback,T.R., Barnstead,M. Bowman,C.L., White,O., Nierman,W.C. and Fraser,C.M. Arabidopsis thaliana chromosome III BAC F3L24 genomic sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Eukaryota; Viridiplantae; Streptophyta; Embryophy
Spermatophyta; Magnoliophyta; eudicotyledons; cor
Rosidae; eurosids II; Brassicales; Brassicaceae;
                                                                                                               Direct Submission
                                                                                                                                                                                                                                                                                                     Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Arabidopsis thaliana. Arabidopsis thaliana
                                                                                                                                                           Lin, X.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ATAC011436 106688 bp
Arabidopsis thaliana chromosome
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AC011436
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           complete sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AC011436.7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TTGTTTGAGTTACCATGCATTGTAGTTTTACAAGTGTAGCTCTCAGCCCTTCATCAAAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CATTAGTGTCCCCATTATTAATTAGCTTGTGAAGATGTTGAAAATGATTTGAACAAAATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TTGTTTGAGTTACCATGCATTGTAGTTTTACAAGTGTAGCTCTCAGCCCCTTCATCAAAAT 66423
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AGTAGGAATAAGAAAGAGCAGCATGAGGAGTCTCTCTCAGGTCTATCTGCATTTCAAGATGA 2040
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GATATATGTGAACAAGTCAGATTTCAGAGTCATCAACACAAGAGGACGTGAACTTAGGGA 1980
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TTGGGAAGTCATATGAAACTCGTCCATGGGATTTAACAGGACAATTTATCGGCTAACAAT 1920
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CATGGTCTTCTTAAAAGATTAGTAGGTGAAGCAAAGGCAAAGGTATAAAAGATTTGATCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AGTAGGAATAAGAAAGAGCAGCATGAGGAGTCTCTCAGGTCTATCTGCATTTCAAGATGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GATATATGTGAACAAGTCAGATTTCAGAGTCATCAACACAAGAGGACGTGAACTTAGGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TTGGGAAGTCATATGAAACTCGTCCATGGGATTTAACAGGACAATTTATCGGCTAACAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AGGAGCTGCTAAGGGATTTCCTGTTCAATGGGGTGGATGAGTTAGGCACAAAAACATTCA 1800
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CATTAGTGTCCCCATTATTAATTAGCTTGTGAAGATGTTGAAAATGATTTGAACAAAATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CATGGTCTTCTTAAAAGATTAGTAGGTGAAGCAAAGGCAAAGGTATAAAAGATTTGATCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ACAGACACTGTATCTGTATTGTTACAATGGATATTGATTTGGTGTTTTGCAGGATCCTGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ACCTGACATGGCGAGCACAAAAGGTGATTTCATTTCCTTTTTGTGTAATTTTGCATGTTTTGA 1560
                                                                                                                                                                                                                                                                                                                                                                       (bases 1 to 106688)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AGGAGCTGCTAAGGGATTTCCTGTTCAATGGGGTGGATGAGTTAGGCACAAAAACATTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ACCTGACATGGCGAGCACAAAAGGTGATTTCATTTCCTTTTGTGTAATTTGCATGTTTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (bases 1 to 106688)
                                                                                                                                                                                                                                                                                                                                          and Kaul, S.
                                                                          (24-JAN-2001) The Institute for Genomic
                                                                                                                                                                                         Dr, Rockville, 106688)
                                                                                                                                                                                                                                                               The
                                                                                                                                                                                                                                                               Institute
                                                                                                                                                                                                                          ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 III BAC F3L24 genomic sequence,
                                                                                                                                                                                                                          20850,
                                                                                                                                                                                                                                                        for Genomic Research,
                                                                                                                                                                                                                          USA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Embryophyta; Tracheophyta; edons; core eudicots;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              linear
                                                                                                                                                                                                                   xlin@tigr.org
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Arabidopsis.
                                                                             Research,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         T.H., Haas,B.,
Barnstead,M.E.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PLN 24-JAN-2001
                                                                             9712
                                                                                                                                                                                                                                                        9712
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              66063
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       66003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1680
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                65943
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       66363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                66303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   66183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        66123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1740
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1620
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          65883
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       COMMENT
                                                                                                                                         gene
                                                                                                                                                                                                                                                 misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            their annotation. Genes with similarity to other proteins are named after the database hits. Genes without significant peptide similarity but with EST similarity are named as 'unknown' proteins. Genes without protein or EST similarity, that are predicted by more than two gene prediction programs over most of their length are annotated as 'hypothetical' proteins. Genes encoding tRNAs are predicted by tRNAscan-SE (Sean Eddy, http://genome.wustl.edu/eddy/tRNAscan-SE/). Simple repeats are identified by repeatmasker (Arian Smit, http://fch.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       http://ftp.genome.washington.edu/RM/RepeatMasker.html). Regions of genomic sequence that are not annotated as genes but have predicted exons by GRAIL are annotated as misc features.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (http://www.cbs.dtu.dk/netpgene/cbsnetpgene.html), searches of the complete sequence against a peptide database and the Arabidopsis EST database at TIGR (http://www.tigr.org/tdb/at/at.html). Annotated genes are named to indicate the level of evidence for the complete sequence are named to indicate the level of evidence for the complete sequence are named to indicate the level of evidence for the complete sequence are named to indicate the level of evidence for the complete sequence are named to indicate the level of evidence for the complete sequence are named to indicate the level of evidence for the complete sequence are named to indicate the level of evidence for the complete sequence are named to indicate the level of evidence for the complete sequence and the sequence are named to indicate the level of evidence for the complete sequence and the sequence are named to indicate the level of evidence for the complete sequence are named to indicate the level of evidence for the complete sequence are named to indicate the level of evidence for the complete sequence are named to indicate the level of evidence for the complete sequence are named to indicate the level of evidence for the complete sequence are named to indicate the level of evidence for the complete sequence are named to indicate the level of evidence for the complete sequence are named to indicate the level of evidence for the complete sequence are named to indicate the level of evidence the level of evidence are named to indicate the level of evidence                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            clone.

Genes were identified by a combination of three methods: Gene grediction programs including GRAIL (available by anonymous ftp grediction programs including GRAIL (available by anonymous ftp grediction programs including GRAIL (available by anonymous ftp grediction programs including GRAIL (available by anonymous ftp grediction programs including GRAIL (available by anonymous ftp grediction programs including GRAIL (available by anonymous ftp grediction programs including GRAIL (available by anonymous ftp grediction programs including GRAIL (available by anonymous ftp grediction programs including GRAIL (available by anonymous ftp grediction programs including GRAIL (available by anonymous ftp grediction programs including GRAIL (available by anonymous ftp grediction programs including GRAIL (available by anonymous ftp grediction programs including GRAIL (available by anonymous ftp grediction programs including GRAIL (available by anonymous ftp grediction programs including GRAIL (available by anonymous ftp grediction programs including GRAIL (available by anonymous ftp grediction programs including GRAIL (available by anonymous ftp grediction programs including GRAIL (available by anonymous ftp grediction programs including GRAIL (available by anonymous ftp grediction programs ftp grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction grediction 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     The orientation of the sequence is from SP6 to T7 end of the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  The Institute 19712 Medical Center Dr. 9712 Mm 20850, USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Medical Center Dr., Rockville, MD 20850, USA On Jan 24, 2001 this sequence version replace Address all correspondence to:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Washington), Genscan (Chris Burge, http://gnomic.stanford.edu/~chris/GENSCANW.html),
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    e-mail: xlin@tigr.org
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             molecular marker CIC7A12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           clone F3L24 is from Arabidopsis chromosome
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Institute for Genomic
                                                                                                                                                                      /note="exon predicted by xgrail, quality
marginal_shadowexon"
                                                                                                                                                                                                                                                                           YQAWLEMTIQVREEMEPSHVRANCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLR
DFLFNGVDELGTKTFIDYFPEYQTEDGTVSDKRSIIGKSYETRPWDLTGQFIG"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     complement (<2362.
                                                                                                                                                                                                                                         complement(1934.
                                                                                                                                                                                                                                                                                                                                                                           /translation="malsmeegfsigscfkadnppvlisaspnkinftlrrrkkrfll
RVSAVSYKEFAESALEETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLL
RSMALENETMQVFDFAGFMEPEYDTP1FCANFFTSTNVNIVYLDLNPLHQLTDQTDYQ
                                                                                                                                                                                                                                                                                                                                                 DKYYNKIMSIYHKYAETFPWGGKLTGESIKFFSPLVMWTRFSSSKEKHKALFSAFLEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                marginal_shadowexon"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /protein_id="AAF14017.1"
/db_xref="GI:6478912"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /note="hypothetical protein"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /gene="F3L24.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         join(248. .469,653. .769,852. .946,1033.
1419. .1523,1612. .1662,1743. .1916)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /note="exon predicted by
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   complement(18. .122)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (AC009326:64324.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /gene="F3L24.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /gene="F3L24.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /note="overlap with BAC clone MZB10
(AC009326:64324. .85561)."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /map="CIC7A12"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /db_xref="taxon:3702"
/chromosome="III"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /organism="Arabidopsis/cultivar="Columbia"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /clone="F3L24"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                .106688
                                                               identical
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       thaliana."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          xgrail, quality
                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                replaced
                                                           hypothetical protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               III and is near the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                gi:12280819
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                and NetPlantGene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          .1126,1213. .1344
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  .1126,1213. .1344,
```

```
mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        misc_teature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           misc_feature
                                                          //LIANS 18 1100-"MGDVELPKRLFRLGSEPEGRKRINNYFTLRWIEIIKAALDONHL
KOLEGSOFGFLLOWGTHOFS VWFLHYILSROLYTDKKYEMWWYBAGKEPIKFAIDDFAL
VTGLNGSKGGFNKDARTRGKMKAVONFTRFYKALFGKERKPTSOWIYGKLSMGKKYK
DPLTRRELSLLLLVDGILCPTCSRTIIDPDHVEWYKDVESFLKYYWGRTSFLATIRSA
KORTAKELAQOTTAIOGFPHALVLTVYACCPAIIYANDFALFYFNYLLSPTLPVEKLVOYVL
GLISLMINWHDARTIDOSGMDRVTSLLNEELLAKEIDLSFSDEEDDEEVSHLLSLIMEE
HPFEHNSWSGGYDANDVEHPSEDEFMADDCVNOAKGDGDEMDVDGSGVAAEERECA
AGEGYUGLDGEANKDGPVTDKDGVSFADGEGLOQEVPRAGEMENNDSGSAGHGLREAV
IKEVADEFEKRVLKIQOSNNDELKSYFEAELVKOKKELVAILTESVREAVSGLNRQAG
IVGECSKCVADAHSKOVKHLNLLVETSSIALDOIRADDFGNKHGVSQOVEPNIGLSEG
SDNLPAAGGINVGVSVPERSNPNTRMEVSGELOKKSKSCSONDAQSNRFLKRAK
DMEHVASTKYVSPTEKLDDEVDIVEPNETSLGITOEINDNRSRLPPRGKKKTFPSKVSV
LRSSNRIRDREIGSVKRELKOMERGVSYVLADGVYLENTEELNIFEGGTLNEGSPAFI
GPFKPFSVPSPSSVKRELKOMERGVSYVLADGVYLENTELNIFEGGTLNEGSGEDLL
GPFKPFSVPSPSSVKRELKOMERGVSYVLADGVYLENTELNIFEGGTLNEGSGEDLL
GPFKPFSVPSPSSVKRELKOMERGVSYVLADGVYLENTELNIFEGGTLNEGSGEDLL
GPFKPFSVPSPSSVKRELKOMERGVSYVLADGVYLENTELNIFEGGTLNEGSGEDLL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /pseudo
9051. .
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GB:AAD56336 [Arabidopsis thaliana]; contains Pfam profile: RNA recognition motif. (aka RRM, RBD, or RNP domain) complement(join(<2362. 2462,2534. .2703,3004. .3276, 3353. .3384,3475. .>3495))
//gene="F3L24.2"
complement(join(2362. .2462,2534. .2703,3004. .3276, 3353. .3384,3475. .3495))
//gene="F3L24.2"
//codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /note="MZBI0.21; identical to hypothetical protein GB:AAD56332 [Arabidopsis thaliana]" complement(join(<10632. 10789,10875. .11340,11454. .1151622. .12016,12222. .12341,12417. .12578,12644. .13375,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /note="exon predicted by xgrail, quality excellent"
complement(9619. 9780)
/note="exon predicted by xgrail, quality good_shadowexon"
complement(<10632. >14351)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /note="exon predicted by xgrail, complement(9181. 9241) /note="exon predicted by xgrail, marginal_shadowexon"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /note="exon predicted by xgrail, quality good_shadowexon"
complement(4553. .4736)
/note="exon predicted by xgrail, quality good_shadowexon"
5389. .5442
VRF IQLRLDKNKPLREDFLPSSFLSELRRQYNKFVGAADKSAFYFSTLARVPFMVRPK
WFAEIDVIYCPMQVERQHWVGLVIDLKKWGVTVLDCNRDVLKDEQVEKYVEHITIMLP
YLIRKHGVNGYMLTQRLEPMTVSRPKIQCSCSSLGLVGIASVVLLELHSVNAMEYCGK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /note="exon predicted 5748. .9002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          complement(4387.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /note="exon predicted by xgrail, quality
marginal_shadowexon"
                                                                                                                                                                                                                                                                                                                                                                     /protein_id="AAF14018.1"
/db_xref="GI:6478913"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             complement(join(10632. .10789,10875. .11340,11454. .11538, 11632. .12016,12222. .12341,12417. .12578,12644. .13375,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Mutator transposon"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FPKEEDNFSIVYLLGEDAIDKAPKLSGTDMGGGRKAVVRFVAYHGRNIFHPRRQKGRI
ICCRPDEKPKMAAIMKIIKKPKRTAKKKIIKKPKMTLE"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /translation="MDEIANKGLEVKRSRKIRDSDIERISVTGYDIELPREHVESELK
KLFSPCGEITDVHIPETRNSSLWSHAFIYFVGEGTADKALQLNGSDMGGWTVDAEADP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /product="putative RNA-binding
/protein_id="AAF14040.1"
/db_xref="GI:6478935"
                                                                                                                                                                                                                                                                                                                                                                                                                 /codon_start=]
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /gene="F3L24.4"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /gene="F3L24.3"
                                                                                                                                                                                                                                                                                                                                                                                                                                 /note="hypothetical protein"
                                                                                                                                                                                                                                                                                                                                                                                                                                                       /gene="F3L24.4"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       note="MZB10.20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              3467.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  3467
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         .9107
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  .>14351
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                14351)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          .4429)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     similar
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 by xgrail, quality good"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   to MURA transposase of maize
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          protein"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        quality
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                quality
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        .11538,
                                 Ş
                                                                                    В
                                                                                                                        Ω<sub>γ</sub>
                                                                                                                                                                         밁
                                                                                                                                                                                                           Š
                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                  δã
                                                                                                                                                                                                                                                                                                                                                                                  Š
                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          γ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δÃ
                                                                                                                                                                                                                                                                                                                                              В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Matches 2160;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     misc_feature
    541
                                          541
                                                                                                                               481
                                                                                                                                                                         421
                                                                                                                                                                                                                 421
                                                                                                                                                                                                                                                              361
                                                                                                                                                                                                                                                                                                                                                                                         301
                                                                                                                                                                                                                                                                                                                                                                                                                                   241
                                                                                       481
                                                                                                                                                                                                                                                                                                      361
                                                                                                                                                                                                                                                                                                                                                 301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        \vdash
TGAAGAAGAATTGAAGAGAGTGTCCGAGGAAGGAGACCTTTGGTTTCAGTTTGTGAGTCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ACCATGACTCGGACGGATGTTGAAATTCATTGTCGTTGCCAATTGCGTTTGTCTCACTGA 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GAATTCCCCACGTCAACGTGACTGTGCATTCCACGTGGCGGATGTGGGCCCTATAGTTGG
                                                                                    TTTAGAAGAAACCAGGAAAAGGATCGTTCTTGAACCTTCACATCTCCCAGGTATATGCAAT
                                                                                                                                                                                                                                                                                AAAGAAAAGATTCTTACTTAGAGTCTCTGCTGTGTCGTATAAGGAATTCGCAGAGTCTGC
                                                                                                                                                                                                                                                                                                                                                                       AAACCCACCTGTTCTAATCTCTGCAAGCCCTAATAAGATCAATTTCACGTTGAGAAGGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GAATTCCCCACGTCAACGTGACTGTGCATTCCACGTGGCGGATGTGGGCCCCTATAGTTGG
                                                                                                                               TACATTTCGTTAGTGTAGTGGGAGGATTATATTTCTCATTGTTTCTTGCTGTGAATTTTG
                                                                                                                                                                       TTTAGAAGAAACCAGGAAAAGGATCGTTCTTGAACCTTCACATCTCCAGGTATATGCAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                   TGTTGTAATGGCTTTATCAATGGAGTTTGGGGTTTTCAATTGGGTCATGCTTCAAGGCACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                       TGTTGTAATGGCTTTATCAATGGAGTTTTGGGTTTTTCAATTGGGTCATGCTTCAAGGCACC
                                                                                                                                                                                                                                                              AAAGAAAAGATTCTTACTTAGAGTCTCTGCTGTGTCGTATAAGGAATTCGCAGAGTCTGC
                                                                                                                                                                                                                                                                                                                                                 AAACCCACCTGTTCTAATCTCTGCAAGCCCTAATAAGATCAATTTCACGTTGAGAAGGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /note="exon pre
17412. 1777
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              14460. .14526
/note="exon predicted bexcellent_shadowexon"
15070. .15229
/note="exon predicted b
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /protein_id="aaf14019.1"
/db_xref="GI:6478914
/db_xref="GI:6678914
/translation="MQTLQHQSULQNPAEAANNQSESDAPPKQVAQAMERLNQAARVI
ADIRLGADRILEAMFVAQPHHTDMPLQLFLREDASMRQHLQDLRLIGKKLEESGVLT
ESLRSRSNSWGLHMPLVCPDGAVVAYAWKRQLAGQAGASAVDRTRLALKAFTDQKRRF
FPHIDDGLKMEPSSKKHRASHLLLENGREEPVDYKTLPDIQSRLEKLVPSVKYSTYGR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GB:AAD56333 [Arabidopsis join(15834. .16133,16228.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   VSLSPAGSVDPDAVAFFSPDEVTSNLLALKYTDSHVKLFKFSCFSFIPFLQGGSYLHA
RGFSVYHVYKHITVIKMRLILYIV"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /gene="F3L24.5"
/note="...
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /note="exon predicted by xgrail,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LNWLKRANSLPGSGSDDPTEASKPIFQSSSKLRSGLQTEVVDKIAVIELSFPSLFRAI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /gene="F3L24.5"
/note="MZB10.22;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /note="unknown protein"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /gene="F3L24.5"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       exon predicted by xgrail,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score 2160;
Pred. No. 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    identical
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ьy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                bу
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           al to hypothetical protein thaliana)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               xgrail,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                xgrail,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            .16393,16566.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        8;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             quality
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   quality
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           quality excellent"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                quality marginal"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            .>17202)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     excellent'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             106688;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
```

180

60

0,

600 600

540 540 480

480

420

360 360 300 300 240 240

420

						, , , ,
1501 1501 1561 1561 1621 1621 1681	321 321 381 381 441 441	141 141 201 201 261 261	961 961 1021 1021 1081	4 4 0 0	0 0 N N C	601 601 661
ACCTGACATGGCCAGCACAAAGGTGATTTCATTTCCTTTTGTGTAATTTGCATGTTTGA 1560	ICTICUTT CIRCAGITACTACICAGGTATATACTCAGCGCCAAAAGCTAAAGCTAAAGCTAAAGCTAAAAGCTAAAAGCTAAAAGCTAAAAGCTAAAAGCTAAAAGCTAAAAGCTAAAAGCTAAAAGCTAAAAGCTAAAAGCTAAAAGCTAAAAGCTAAAAGCTATTATACTCAGCGGCCAAAAAGCTAGCATATATACTCAGCAGCACGAGCATGAGAAGGTTTTTGAAAAGCTTTGAAAAGCTATACAAAGCTATAAAAGCTTTGAAAAGCTTTAAAAAGCTTTAAAAAGCTAAAAAGCTAAAAAGCTAAAAAAAGTAAAAAAAA	ACACCAAATTACTCAATTGCAAGTAAACCTAATGCTGAGGTGTAAATGACTGATCTTGAG	1 AGTTATGCTGGAGTTATCAGGTCTGTATTGTCCAAACTGATGTTCAATATTTTACTGTAT 1020	TCTTCGCTTAGGTCTTTGACTTTGCGGGTTTCATGTATTGATTG	AAAGATTAGACTCTTGAGGGGTATGGCAATTAGAGCTTCAAATGCTTCTTTTAAATCTTC 72  AAAGATTAGACTCTTGAGGAGTATGGCAATAGAGAATGAGAATGCAGGTTTAACTTCA 78	TTATATAAAGTAAAAGTTCAGATTTTGTTTTTCTAATCACGAAACTGTTTCAGGAAAGTA 66
•						

Db	Qy	Db	Qy	Db	Qy	Db	Qy	рь	v V	Db	QУ	DЪ	Qy	Db
2101	2101	2041	2041	1981	1981	1921	1921	1861	1861	1801	1801	1741	1741	1681
GAGAATCCTCGAGTATGATATGATTTTAATGAAAATGTATTCGTCTCTACCTAATCAACA 2160	GAGAATCCTCGAGTATGATATGATTTTAATGAAAATGTATTCGTCTCTACCTAATCAACA 2160	TTGTTTGAGTTACCATGCATTGTAGTTTTACAAGTGTAGCTCTCAGCCCTTCATCAAAAT 2100	TTGTTTGAGTTACCATGCATTGTAGTTTTACAAGTGTAGCTCTCAGCCCTTCATCAAAAT 2100	AGTAGGAATAAGAAAGAGCAGCATGAGGAGTCTCTCAGGTCTATCTGCATTTCAAGATGA 2040	AGTAGGAATAAGAAAGAAGCAAGCATGAAGAAGTCTCTCAAGGTCTATCTGCATTTCAAGATGA 2040	GATATATGTGAACAAGTCAGATTTCAGAGTCATCAACACAAGAGGGACGTGAACTTAGGGA 1980	GATATATGTGAACAAGTCAGATTTCAGAGTCATCAACACAAGAGGACGTGAACTTAGGGA 1980	TIGGGAAGTCATATGAAACTCGTCCATGGGATTTAACAGGACAATTTATCGGCTAACAAT 1920	TTGGGAAGTCATATGAAACTCGTCCATGGGATTTAACAGGACAATTTATCGGCTAACAAT 1920	TTGATTACTTTCCAGAGTACCAAACAGAAGATGGAACTGTAAGCGATAAACGAAGTATCA 1860	TTGATTACTTTCCAGAGTACCAAACAGAAGATGGAACTGTAAGCGATAAACGAAGTATCA 1860	AGGAGCTGCTAAGGGATTTCCTGTTCAATGGGGTGGATGAGTTAGGCACAAAAACATTCA 1800	AGGAGCTGCTAAGGGATTTCCTGTTCAATGGGGTGGATGAGTTAGGCACAAAAACATTCA 1800	

RESULT 3 AY099706 LOCUS DEFINITION ORGANISM Aruyy/Ub 1358 bp mRNA linear PLN 06-MAY-2002 Arabidopsis thaliana unknown protein (At3909150) mRNA, complete cds.

ACCESSION VERSION KEYWORDS SOURCE AY099706.1 FLI\_CDNA.

GI:20466479

REFERENCE AUTHORS Arabidopsis thaliana
ISM Arabidopsis thaliana
Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots;
Residae; eurosids II; Brassicales; Brassicaceae; Arabidopsis.
CE 1 (bases 1 to 1358)
RS Nguyen, M., Karlin Neumann, G., Southwick, A., Lam, B., Miranda, M.,
Palm, C.J., Bowser, L., Jones, T., Banh, J., Carninci, P., Chen, H.,
Cheuk, R., Chung, M.K., Hayashizaki, Y., Ishida, J., Kamiya, A.,
Kawai, J., Kim, C., Lin, J., Liu, S.X., Narusaka, M., Pham, P.K.,
Sakano, H., Sakurai, T., Satou, M., Seki, M., Shinn, P., Yamada, K.,
Shinozaki, K., Ecker, J., Theologis, A. and Davis, R.W.
Direct Submission
AL Submitted (24-APR-2002) DNA Sequencing and Technology Center,
Stanford University, 855 California Avenue, Palo Alto, CA 94304,

TITLE JOURNAL

COMMENT

RIKEN Genomic Sciences Center (GSC) members carried out the collection and clustering of RAFL cDNAS (RAFL cDNA : 'RIKEN Arabidopsis Full-Length cDNA'): Seki,M., Narusaka,M., Ishida,J., Satou,M., Kamiya,A., Sakural,T., Carninci,P., Kawai,J., Hayashizaki,Y. and Shinozaki,K. e-mail for correspondence: arab@sequence.stanford.edu

The Salk, Stanford, PGEC (SSP) Consortium members carried out the sequencing and annotation of the RAFL cDNAs: Nguyen,M., Southwick,A., Karlin-Neumann,G., Lam,B., Miranda,M., Palm,C.J., Bowser,L., Jones,T., Banh,J., Chen,H., Cheuk,R., Chung,M.K., Kim,C., Lin,J., Liu,S.X., Pham,P.K., Sakano,H., Shinn,P., Yamada,K., Ecker,J., Theologis,A. and Davis,R.W.

Nguyen,M, (SSP/Stanford) and Seki,M. (RIKEN GSC) contributed equally to this work. Shinozaki,K. (RIKEN GSC) and Davis,R.W.

Qγ

1

δÃ 밁

B δÃ Ъ VΩ рь 5 Ъ VΩ Дb ΔÃ В ρ DЬ Qy ₽ ρy Ъ γQ 밁 δÃ рь δÃ 멍 Qγ Дb Qγ 밁 Qy , DP δÃ В δÃ В 20

```
VERSION
KEYWORDS
                                                                                                               LOCUS
DEFINITION
                                                                                                                                      RESULT 4
AB045112
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               BASE COUNT
ORIGIN
                                                                                                                                                                                        밁
                                                                                                                                                                                                      γQ
                                                                                                                                                                                                                             В
                                                                                                                                                                                                                                                      Ş
                                                                                                                                                                                                                                                                            Дb
                                                                                                                                                                                                                                                                                                    QY
                                                                                                                                                                                                                                                                                                                                   망
                                                                                                                                                                                                                                                                                                                                                         Q
                                                                                                                                                                                                                                                                                                                                                                                 망
                                                                                                                                                                                                                                                                                                                                                                                                    Š
                                                                                                                                                                                                                                                                                                                                                                                                                                  В
                                                                                                                                                                                                                                                                                                                                                                                                                                                       δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FEATURES
                                                                                       ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local
                                       ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                source
                                                                                                                                                                                        1313
                                                                                                                                                                                                              2101
                                                                                                                                                                                                                                      1253
                                                                                                                                                                                                                                                                                      1193
                                                                                                                                                                                                                                                                                                                                                                                   1073
                                                                                                                                                                                                                                                                                                                                                                                                            1861
                                                                                                                                                                                                                                                                                                                                                                                                                                  1013
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1741
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  953
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  406;
                                                                                      AB045112 1337 bp mRNA linear PLN Arabidopsis thaliana mRNA for phytochromobilin synthase protein, complete cds. AB045112
Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae; eurosids II; Brassicales; Brassicaceae; Arabidopsis.
                                     Arabidopsis thaliana cDNA to mRNA Arabidopsis thaliana
                                                                           AB045112.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (SSP/Stanford)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Similarity
                                                                                                                                                                                    TTGATTACTTTCCAGAGTACCAAACAGAAGATGGAACTGTAAGCGATAAACGAAGTATCA
                                                                                                                                                                                                                                                                                                                                              GATATATGTGAACAAGTCAGATTTCAGAGTCATCAACACAAGAGGACGTGAACTTAGGGA
                                                                                                                                                                                                                                                                                                                                                                                               TTGGGAAGTCATATGAAACTCGTCCATGGGATTTAACAGGACAATTTATCGGCTAACAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AGGAGCTGCTAAGGGATTTCCTGTTCAATGGGGTGGATGAGTTAGGCACAAAAACATTCA
                                                                                                                                                                                                                                                                                                AGTAGGAATAAGAAAGAGCAGCATGAGGAGTCTCTCAGGTCTATCTGCATTTCAAGATGA
                                                                                                                                                                                                                                                          TTGTTTGAGTTACCATGCATTGTAGTTTTACAAGTGTAGCTCTCAGCCCTTCATCAAAAT
                                                                                                                                                                                                                                                                                                                                 GATATATGTGAACAAGTCAGATTTCAGAGTCATCAACACAAGAGGACGTGAACTTAGGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                 TTGATTACTTTCCAGAGTACCAAACAGAAGATGGAACTGTAAGCGATAAACGAAGTATCA
                                                                                                                                                                                                                                                                                   AGTAGGAATAAGAAAGAGCAGCATGAGGAGTCTCTCAGGTCTATCTGCATTTCAAGATGA
                                                                                                                                                                                                                                                                                                                                                                                 TTGGGAAGTCATATGAAACTCGTCCATGGGATTTAACAGGACAATTTATCGGCTAACAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DFLFNGVDELGTKTFIDYFPEYQTEDGTVSDKRSIIGKSYETRPWDLTGQFIG"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ecotype: Columbia"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /clone="RAFL09-83-B22 (R25336)"
/note="This clone is in pBluesc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /organism="Arabidopsis
/db_xref="taxon:3702"
/chromosome="3"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ford) contributed equally Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /gene="At3g09150"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /gene-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    note-"F3L24.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          18.8%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           231 c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 At3g09150"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 406; DB Pred. No. le: 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ф
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          393 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  thaliana"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1e-206;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  pBluescript
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       BB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       to this
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       work
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       as
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PIS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0,
                                                                                                              HY2
                                                                                                                          03-MAR-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                          2040
                                                                                                                                                                                                                                                                                                                                                                                                         1920
                                                                                                                                                                                                                                                                                                                                                                                                                                                        1860
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1012
                                                                                                                                                                                                                                                             2100
                                                                                                                                                                                                                                                                                                                                  1192
                                                                                                                                                                                                                                                                                                                                                          1980
                                                                                                                                                                                                                                                                                                                                                                                 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                  1072
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1800
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          JOURNAL
MEDLINE
REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                            BASE
                                                                                    밁
                                                                                                                                    밁
                                                                                                                                                                                                         Q
                                                                                                                                                                                                                                   В
                                                                                                                                                                                                                                                         δõ
                                    밁
                                                            Ş
                                                                                                       Qy
                                                                                                                                                          Ω
                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                        Qy
                                                                                                                                                                                                                                                                                                                                                                                 ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FEATURES
                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AUTHORS
                                                                                                                                                                                                                                                                                                                                  Matches 381;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                            COUNT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                        3'UTR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              5'UTR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         source
                                                                                                                                                                                                                                                                                                                                                                                                                                polyA_site
               2101
                                                                                      1150
                                                                                                            1981
                                                                                                                                    1090
                                                                                                                                                            1921
                                                                                                                                                                                    1030
                                                                                                                                                                                                            1861
                                                                                                                                                                                                                                                           1801
                                                                                                                                                                                                                                     970
                                                                                                                                                                                                                                                                                   910
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Kohchi, T
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Lagarias, J.C.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Fax:81-743-72-5569)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               21124703
                                                                                                                                                                                                                                                                                                                                              Similarity
 GAGAATCCTCGAGTATGATAT
                                    TTGATTACTTTCCAGAGTACCAAACAGAAGATGGAACTGTAAGCGATAAACGAAGTATCA
                                                                                                                                                                                                                                                                                                AGGAGCTGCTAAGGGATTTCCTGTTCAATGGGGTGGATGAGTTAGGCACAAAAACATTCA 1800
                                                                                                  AGTAGGAATAAGAAAGAGCAGCATGAGGAGTCTCTCAGGTCTATCTGCATTTCAAGATGA
                                                                                                                                                            GATATATGTGAACAAGTCAGATTTCAGAGTCATCAACACAAGAGGACGTGAACTTAGGGA
                                                                                                                                                                                    TTGGGAAGTCATATGAAACTCGTCCATGGGATTTAACAGGACAATTTATCGGCTAACAAT
                                                                                                                                                                                                                                     TTGATTACTTTCCAGAGTACCAAACAGAAGATGGAACTGTAAGCGATAAACGAAGTATCA
                                                                                                                                                                                                                                                                                  AGGAGCTGCTAAGGGATTTCCTGTTCAATGGGGTGGATGAGTTAGGCACAAAAACATTCA
                                                                                    AGTAGGAATAAGAAAGAGCAGCATGAGGAGTCTCTCAGGTCTATCTGCATTTCAAGATGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (bases 1
                                                                                                                                                                                                                                                                                                                                                                                              434
                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                              ø
                                                                                                                                                                                                                                                                                                                                                                                                                                /gene="HY2"
1316
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Location/Qualifiers
1. .1337
                                                                                                                                                                                                                                                                                                                                                                                                                                                        1086.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /organism="Arabidopsis
/db_xref="taxon:3702"
1. .1337
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /gene="HY2"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /gene="HY2"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /gene="HY2"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Mukougawa, K.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   to 1337)
                                                                                                                                                                                                                                                                                                                                               100.0%;
                                                                                                                                                                                                                                                                                                                                                          17.68;
                                                                                                                                                                                                                                                                                                                                  0;
                                                                                                                                                                                                                                                                                                                                            Score 381;
Pred. No.
                                                                                                                                                                                                                                                                                                                                  Mismatches
```

3e-193;

0;

Indels

0;

Gaps

0;

1149

2040

1980

1089 1920 1029 1860 969

2100

1269

```
REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1 (sites)
Kohchi,T.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Submitted (21-JUN-2000) Takayuki Kohchi, Nara and Technology, Graduate School of Biological Takayama, Ikoma, Nara 630-0101, Japan
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      The arabidopsis hy2 gene encodes phytochromobilin synthase, ferredoxin-dependent biliverdin reductase plant Cell 13 (2), 425-436 (2001)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     E-mail:kouchi@bs.aist-nara.ac.jp,
                                                                        /gene="HY2"
/note="21 a nucleotides"
/ 226 c 301 g 376
                                                                                                                                                                                                                                                                                                /translation="MALSMEFGFSIGSCFKAPNPPVLISASPNKINFTLRRRKKRFLLRVSAVSYKEFAESALEETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIENETMQVFDFAGFMEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTDYQ
                                                                                                                                                                                                                                                                                                                                                                      /product-"phytochromobilin synthase HY2
/protein_id="BAB33374.1"
/db_xref="GI:13359273"
                                                                                                                                                                                                                          DFLFNGVDELGTKTFIDYFPEYQTEDGTVSDKRSIIGKSYETRPWDLTGQFIG*
                                                                                                                                                                                                                                               DKYYNKIMSIYHKYAETFPWGGKLTGESIKFFSPLVMWTRFSSSKEKHKALFSAFLEY
YQAWLEWTIQVREEMEPSHVRANCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Frankenberg, N.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        thaliana"
DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Tel:81-743-72-5561
8;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Masuda,M.,
Length 1337;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sciences;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Institute
                                                                                                                                                                                                                                                                                                                                                                                                                          protein"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Yokota, A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Science
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              and
```

밁

1270 GAGAATCCTCGAGTATGATAT 1290

```
VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 JOURNAL
REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 5
AY088874
                      Š
                                                                                                                                                                                  BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ORGANISM
                                                                                                    Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TITLE
                                                                                Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    source
                         1741 AGGAGCTGCTAAGGGATTTCCTGTTCAATGGGGTTGGATTAGGCACAAAAACATTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              C-terminal end of the encoded protein. Please note that these cDNI sequences are derived from the Ws or LAer ecotypes and therefore may contain polymorphisms when compared to sequences from Col-0. Genset carried out the library production and sequencing of the full-length clones. Ceres, Inc. carried out the clustering of the 5' sequences, selection of clones, and sequence assembly.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       are 3'-truncated; approximately two percent represent alternative splice variants, including unspliced introns and spliced exons; one percent may contain premature stop codons; five percent may have frame shifts in a coding region. A sequence is considered to be 5'-truncated if it lacks the translation initiation start (ATG). A sequence is considered to be 3'-truncated if it lacks the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Submitted (11-MAR-2002) Ceres, Inc, Malibu, CA 90265, USA
This clone sequence is one of 5,000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AY088874.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Arabidopsis thaliana clone
AY088874
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    This cione sequence is one of 5,000 Ceres full-length cDNAs made available to TIGR and Genbank. The following quality assessment of this set was done by comparison with known proteins: two percent of the clones are estimated to be 5'-truncated; less than one percent
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Genome Biol. (2002) In press
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Haas, B.J., Volfovsky, N., Town, C.D., Troukhan, M., Alexandrov, N., Feldmann, K.A., Flavell, R.B., White, O. and Salzberg, S.L. Full-length messenger RNA sequences greatly improve genome
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae; eurosids II; Brassicales; Brassicaceae; Arabidopsis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Arabidopsis thaliana
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     3 (bases 1 to 1308)
Brover, V., Troukhan, M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Unpublished
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Full-Length cDNA from Arabidopsis thaliana
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2 (bases 1 to 1308)
Brover, V., Troukhan, M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         annotation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FLI_CDNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AY088874
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Feldmann,K.
                                                                                                       Similarity
Conservative
                                                                                                                                                                                                                                                                                 /product="unknown"
/protein_id="AAM67180.1"
/protein_id="AAM67180.1"
/db_xref="GI:21618130"
/translation="MEEGFSIGSCFKAPNPPVLISASPNKINFTLRRNKRFLLRVSA
/translation="MEEGFSIGSCFKAPNPPVLISASPNKINFTLRRNKRFLLRVSA
VSYKEFAESALEETRKRIVLEPSHLOYSSMTGLDGKTELOMLAFKSSKIRLLRSMAIE
NETMQVFDFAGFMEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTDYQDKYYNK
INSIYHKYAETFPWGGKLTGESIKFFSPLVMMTRFSSSKEKHKALFSAFLEYYQAWLE
INSIYHKYAETFPWGGKLTGESIKFFSPLVMMTRFSSSKEKHKALFSAFLEYYQAWLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /clone="98026"
82. .1053
                                                                                                                                                                                                                                    VDELGTKTFIDYFPEYQTEDGTVSDKRSIIGKSYETRPWDLTGQFIG
                                                                                                                                                                                                                                                                MTTQVREEMEPSHVRANCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLRDFLFNG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /organism="Arabidopsis thaliana"
/db_xref="taxon:3702"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          to 1308)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GI:21407648
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        tion/Qualifiers
                                                                                                       14.7%;
                                                                                                                                                                                                              O
                                                                        Score 318; DB 8; L
Pred. No. 2.6e-159;
                                                                                                                                                                                                              296
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Alexandrov, N., Lu, Y.-P., Flavell, R.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Alexandrov, N., Lu, Y.-P.,
                                                                                                                                                                                                           9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               )8 bp mRN
98026 mRNA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         3007 Malibu Canyon Road
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  complete sequence.
                                                                                                                                Length 1308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             linear
                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Flavell, R. and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PLN 27-JUN-2002
                                                                           0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         these cDNA
                                                                           Gaps.
                                                                           0;
```

4

source

Location/Qualifiers 1. .1092 /organism="Arabidopsis /db\_xref="taxon:3702"

thaliana"

```
REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RESULT 6
AY128900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ρy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               δã
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         QY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ъ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Š
                                                                                                                                                                                                                                                                                                                                                                                                   COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Locus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1981
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1058
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1921
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1801 TTGATTACTTTCCAGAGTACCAAACAGAAGATGGAACTGTAAGCGATAAACGAAGTATCA 1860
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              938
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        878
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1 (bases 1 to 1092)
Tripp, M., Southwick, A., Karlin-Neumann, G., Nguyen, M., Miranda, M., Palm, C.J., Bowser, L., Jones, T., Banh, J., Carninci, P., Chen, H., Cheuk, R., Chung, M.K., Hayashizaki, Y., Ishida, J., Kamiya, A., Kawai, J., Kim, C., Lin, J., Liu, S.X., Narusaka, M., Pham, P.K., Sakusai, T., Satou, M., Seki, M., Shinn, P., Yamada, K., Sakasai, K., Ecker, J., Theologis, A. and Davis, R.W.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Arabidopsis thaliana
Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots;
Rosidae; eurosids II; Brassicales; Brassicaceae; Arabidopsis.
                                                                                         The Salk, Stanford, PGEC (SSP) Consortium members constructed and sequenced the pUNI (ORF) clones using the RAFL cDNAs: Tripp,M., Nguyen,M., Southwick,A., Karlin-Neumann,G., Lam,B., Miranda,M., Palm,C.J., Bowser,L., Jones,T., Banh,J., Chen,H., Cheuk,R., Chung,M.K., Kim,C., Lin,J., Liu,S.X., Pham,P.K., Sakano,H., Shinn,P., Yamada,K., Ecker,J., Theologis,A. and Davis,R.W.
                                                                                                                                                                                                                                                       The RIKEN Genomic Sciences Center (GSC) members carried out the collection and clustering of RAFL CDNAS (RAFL CDNA: 'RIKEN Arabidopsis Full-Length cDNA'): Seki,M., Narusaka,M., Ishida, Satou,M., Kamiya,A., Sakurai,T., Carninci,P., Kawai, J., Hayashizaki,Y. and Shinozaki,K.
Tripp,M, (SSP/Stanford) and Seki,M. (RIKEN GSC) contributed equally to this work. Shinozaki,K. (RIKEN GSC) and Davis,R.W. (SSP/Stanford) contributed equally to this work as PIs.
                                                                                                                                                                                                                                                                                                                                                                                                 e-mail
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Submitted (01-JUL-2002)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Arabidopsis thaliana.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AY128900.1 FLI_CDNA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Arabidopsis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AY128900
                                                                                                                                                                                                                                                                                                                                                                                                                                                 Stanford University,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TTGTTTGAGTTACCATGCATTGTAGTTTTACAAGTGTAGCTCTCAGCCCTTCATCAAAAT 2100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AGGAGCTGCTAAGGGATTTCCTGTTCAATGGGGTGGATGAGTTAGGCACAAAAACATTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TTGTTTGAGTTACCATGCATTGTAGTTTTACAAGTGTAGCTCTCAGCCCTTCATCAAAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AGTAGGAATAAGAAGAGCAGCATGAGGAGTCTCTCAGGTCTATCTGCATTTCAAGATGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AGTAGGAATAAGAAAGAGCAGCATGAGGAGTCTCTCAGGTCTATCTGCATTTCAAGATGA 2040
                                                                                                                                                                                                                                                                                                                                                                                                   for correspondence: arab@sequence.stanford.edu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1092
thaliana unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GI:22136443
                                                                                                                                                                                                                                                                                                                                                                                                                                                 02) DNA Sequencing and Technology Center,
855 California Avenue, Palo Alto, CA 94304,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       bp mRNA linear PLI
protein (At3g09150) mRNA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PLN 07-AUG-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           complete
                                                                                                                                                                                                                                                                                                            Ishida, J.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   . 997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1237
```

```
REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ωy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 7
ATAC009326/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               문
                                                                                                                                              REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            BASE COUNT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ORGANISM
                                                                                                                                                                                                          TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Matches 278;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
Best Local Similarity
                                                                                                                 AUTHORS
                                                                                                                                                                            JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1055
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1801
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1741 AGGAGCTGCTAAGGGATTTCCTGTTCAATGGGGTGGATGAGTTAGGCACAAAAACATTCA 1800
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         875
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    815
                                                                                                                                                                                                                                                                                                                                                         Arabidopsis thaliana
Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots;
Rosidae; eurosids II; Brassicales; Brassicaceae; Arabidopsis.
Lin,x. and Kaul,S.

Direct Submission
Submitted (16-AUG-1999) The Institute for Genomic Research,
Submitted (16-AUG-1999) The Institute for Genomic Research,
Medical Center Dr, Rockville, MD 20850, USA, xlin@tigr.org
                                                                                                                                                                                             Lin,X., Kaul,S., Town,C.D., Benito,M.-I., Creasy,T.H., Haas,B., Ronning,C.M., Koo,H., Fujii,C.Y., Utterback,T.R., Barnstead,M.E. Bowman,C.L., White,O., Nierman,W.C. and Fraser,C.M. Arabidopsis thaliana chromosome III P1 MZB10 genomic sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      HTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ATAC009326 85561 bp
Arabidopsis thaliana chromosome
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         complete sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Arabidopsis thaliana.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AC009326.8 GI:12408713
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AC009326
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GATATATGTGAACAAGTCAGATTTCAGAGTCATCAACACAAGAGGACGTGAACTTAGGGA 1980
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TTGGGAAGTCATATGAAACTCGTCCATGGGATTTAACAGGACAATTTATCGGCTAACAAT 1920
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TTGATTACTTTCCAGAGTACCAAACAGAAGATGGAACTGTAAGCGATAAACGAAGTATCA 1860
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AGTAGGAATAAGAAAGAGCAGCATGAGGAGTCTCTCAG 2018
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GATATATGTGAACAAGTCAGATTTCAGAGTCATCAACACAAGAGGACGTGAACTTAGGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TTGGGAAGTCATATGAAACTCGTCCATGGGATTTAACAGGACAATTTATCGGCTAACAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TTGATTACTTTCCAGAGTACCAAACAGAAGATGGAACTGTAAGCGATAAACGAAGTATCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AGGAGCTGCTAAGGGATTTCCTGTTCAATGGGGTGGATGAGTTAGGCACAAAAACATTCA
                                                                                                                                                                                                                                                                                                                                  (bases 1 to 85561)
                                                                                                                                           (bases 1 to 85561)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               352
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /product="unknown protein"
/protein_id="AAM91300.1"
/protein_id="AAM91300.1"
/db_xref=="G01:22136444"
/db_xref=="G01:22136444"
/translation="MALSMEFGFSIGSCFKAPNPPVLISASPNKINFTLRRRKKFFLL
/translation="MALSMEFGFSIGSCFKAPNPPVLISASPNKINFTLSTKILL
/translation="MALSMEFGFSIGSCFKAPNPPVLISASPNKINFTLAFKSSKIRLL
/translation="MALSMEFGFSIGSCFKAPNPVLIVLDLNDLAPKSSTILL
/translation="MALSMEFGFSIGSCFKPTSTYNVIIVLDLNDLAPKJSSTILL
/translation="MALSMEFGFSIGSTSTYNVIIVLDLNDLAPKJSSTILL
/translation="MALSMEFGFSIGSTSTYNVIIVLDLNDLAPKJSSTILL
/translation="MALSMEFGFSIGSCFKAPNPVLISASPNKIILL

/translation="MALSMEFGFSIGSCFKAPNPVLISASPNKIILL"
/translation="MALSMEFGFSIGSCFKAPNPVLISASPNKIILL"
/translation="MALSMEFGFSIGSCFKAPNPVL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ecotype: Columbia"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         a template
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /gene="At3g09150"
/note="F3L24.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /note="This clone
PCR product using
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /chromosome="3"
/clone="U25336"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /gene="At3g09150"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          12.9%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 278; DB 8; L. Pred. No. 9.1e-138;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                is in pENTR/SD-dTopo This is a cloned RIKEN clone RAFL09-83-B22 (AY099706) as
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              III
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DNA linear PLN 24-JAN
I P1 MZB10 genomic sequence,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1092
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 1092;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels · 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PLN 24-JAN-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      934
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    874
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    JOURNAL
                CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            misc_feature
                                                                            mRNA
                                                                                                                                                                                                    gene
                                                                                                                                                                                                                                                                misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                            misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    source
                                                                                                                                                                                                                                                                                                                                  misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (http://www.cbs.dtu.dk/netpgene/cbsnetpgene.html), searches of the complete sequence against a peptide database and the Arabidopsis EST database at TIGR (http://www.tigr.org/tdb/at/at.html). Annotated genes are named to indicate the level of evidence for their annotation. Genes with similarity to other proteins are named after the database hits. Genes without significant peptide similarity but with EST similarity are named as 'unknown' proteins. Genes without protein or EST similarity, that are predicted by more than two gene prediction programs over most of their length are annotated as 'hypothetical' proteins. Genes encoding tRNAs are predicted by tRNAscan-SE (Sean Eddy, http://genome.wustl.edu/eddy/tRNAscan-SE/). Simple repeats are identified by repeatmasker (Arian Smit, for genes weather the adv.pm/genogatmasker html). Beginns of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Submitted (24-JAN-2001) The Institute for Genomic Research, Medical Center Dr., Rockville, MD 20850, USA On Jan 24, 2001 this sequence version replaced g1:12280842.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Genes were identified by a combination of three methods: Gene prediction programs including GRAIL (available by anonymous ftp from arthur.epm.ornl.gov), Genefinder (Phil Green, University of Washington), Genscan (Chris Burge,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  http://ftp.genome.washington.edu/RM/RepeatMasker.html). Regions of genomic sequence that are not annotated as genes but have predicted exons by GRAIL are annotated as misc features.

Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  e-mail: xlin@tigr.org
P1 clone MZB10 is from Arabidopsis chromosome III and is near the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Lin, X.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                http://gnomic.stanford.edu/~chris/GENSCANW.html), and NetPlantGene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 The orientation of the sequence is from SP6 to T7 end of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  molecular marker CIC7A12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            9712 Medical Center Dr. Rockville, MD 20850, US
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Xiaoying Lin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Address all correspondence to:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (bases 1 to 85561)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Institute for Genomic Research
                                                                                                                                                                                                                                                                                                                           /note="exon predicted by xgrail, complement(1692. 1731)
/note="exon predicted by xgrail, marginal_shadowexon"
complement(1852. 1922)
                                                                  /note="similar to MITOCHONDRIAL INNER MEMBRANE PROTEASE SUBUNIT 2 GB:P46972 [Saccharomyces cerevisiae]" join(<2185. .2338.2432. .2504,2922. .3081,3204. .>3281)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1508. 1606
/note="exon predicted by xgrail, complement(1516. 1602)
/note="exon predicted by xgrail,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           marginal_shadowexon*
1655. .1758
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /note="exon predicted
excellent_shadowexon"
                                                                                                                                                                                                                                                                /note="exon predicted by 1854. .1933
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    complement (587.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /db_xref="taxon:3702"
/chromosome="III"
/map="CIC7A12"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /organism="Arabidopsis
/cultivar="Columbia"
                                                                                                                                                                      /gene="MZB10.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /note="exon predicted by xgrail,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /note="exon predicted by xgrail,
                                           'gene="MZB10.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              . 85561
                                                                                                                                                                                                                              predicted by xgrail, quality marginal"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               by xgrail,
             .2504,2922. .3081,3204. .3281)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             thaliana"
                                                                                                                                                                                                                                                                                             xgrail,
                                                                                                                                                                                                                                                                                          quality good_shadowexon"
                                                                                                                                                                                                                                                                                                                                                                                           quality
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  quality
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  quality excellent"
                                                                                                                                                                                                                                                                                                                                                                                                                                                          quality marginal"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       quality
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   quality
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     quality good"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 genes but have predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      marginal"
```

```
repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               repeat_region
  {\tt SRSGSIERGGGPTSGGSGNARRQSCSPSRGRAPIGNTNGSLTGVRGRAKASNGGSGCD}
                                   /translation="MITHDRDEELSLFLEMRRREKEHRADSLLTGSDNVSINATLTAA AAAALSGVSETASSQRYPLRRTAAENFLYSENEKSDYDWLLTPPGTPQFEKESHRSVM MCHDARDRETTVLKSRLGNCREDIVSGNNKPQTSSSSVAGLRRPSSSGSSRSTSRPA TPTRRSTTPTTSTSRPVTTRAANSRSSTPTSRATLTAARATTSTAAPRTTTTSSGSAR SATPTRSNPRPSSASSKKPVSRPATPTRRPSTPTGPSIVSSKAPSRCTSPSPTVNSLS
                                                                                                                                                                                                                                                                                                                                                                                                                                          /note="exon predicted by xgrail, quality complement(6418. .6474)
/note="exon predicted by xgrail, quality excellent_shadowexon" complement(6632. .6705)
                  KAPSRGTSPSPTLNSSRPWKPPEMPGFSLEAPPNLRTTLADRPVSASRGRPGVASAPG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 marginal_shadowexon"
5534. .5615
                                                                                                                                                /protein_id="AAD56316.1"
/db_xref="GI:5923665"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           complement(6084. .6095)
/note="exon predicted by xgrail, quality
marginal_shadowexon"
                                                                                                                                                                                         /codon_start=1
                                                                                                                                                                                                     /note="hypothetical protein"
                                                                                                                                                                                                                                /gene="MZB10.3"
                                                                                                                                                                                                                                                                 join(6920
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /note="exon predicted by xgrail, quality
excellent_shadowexon"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /note="exon predicted by xgrail, quality excellent"
complement(5641..5725)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GB:AAD47882 [Homo sapiens]
join(<4496. .4591,5070. .5
/qene="MZB10.2"
                                                                                                                                                                                                                                                                                      /gene="MZB10
                                                                                                                                                                                                                                                                                                                               join(<6920.
                                                                                                                                                                                                                                                                                                                                                        note="similar to unknown protein GB:AAB95292 [Arabidopsis
                                                                                                                                                                                                                                                                                                                                                                                       /gene="MZB10.3"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           complement(5490.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DNVVNVTVGEKEHRVMITGWHTVADIFCVSCGSLVGWKYEIAYDKSQKYKEGKFILER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /product="Yippee-like protein"
/protein_id="AAD56315.1"
/db_xref="GI:5923664"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  join(4496. .4591,5070. .5113,5199.
/gene="MZB10.2"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /note="exon predicted by xgrail, marginal_shadowexon"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /translation="MGRLFVIDLEGLVYSCKYCQTHFAVTNDIISKSFHCKHGRAYLF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /note="similar to Yippee putative zinc binding GR:AAD47882 [Homo saniens]"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              VIRVPEGHCWVEGDNKTSSLDSRSFGPIPLGLIQGRVTRVMWPPQRISKIGR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  complement(3872
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 marginal_shadowexon"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /note="exon predicted by xgrail,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            complement(3372.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /note="exon predicted by xgrail, quality
marginal_shadowexon"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      complement(3284. .3360)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /translation="mGIQNILWQVAKKSFTGSIIGLTISDRCCSVVPVRGDSMSPTFN
PQRNSYLDDYVLVDKFCLKDYKFARGDVVVFSSPTHFGDRYIKRIVGMPGEWISSSRD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /product="putative signal peptidase"
/protein_id="AAD56314.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                'db_xref="GI:5923663"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /gene="MZB10.1"
                                                                                                                                                                                                                                                                                                                                                                                                             ....cut(6632. .6705)
_family="(GA)n"
|. .>9323
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        family="(GAAAA)n"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               .6476
                                                                                                                                                                                                                                                           .7010,7097. .7253,7541. .7646,7762. .8769
                                                                                                                                                                                                                                                                                                                   ...7010,7097. ..7253,7541. ..7646,7762.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            .3486)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           .4055)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  . 3962)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                by xgrail, quality
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     .5113,5199.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          quality
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 quality
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                .5307,5386.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               .5307,5386. .>5463)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  excellent"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        protein
                                                                                                                                                                                                                                                                                                                       .8769,
                                                                                                                                                                                                                                                                                                                                                      REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                              VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                  REFERENCE
AUTHORS
                                                                                                                 FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GPIP451A1/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     δã
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT
                                                                                                                                                                                                                                                                                                                                   TITLE
                                                                                                                                                                                               JOURNAL
                                                                                                                                                                                                                    TITLE
                                                                                                                                                                                                                                                                           MEDLINE
                                                                                                                                                                                                                                                                                            JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local :
CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Local
                                                                                                                                                                                                                                    shizaki,K.
                                                                                                                                                                                                                                                                         14060096
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Similarity
                                                                                                                                                                                                                                                                                                                                                                      (sites)
```

mRNA CDS

gene

CDS

mRNA

```
21713 TGCATGTTTGAACAGACACTGTATCT 21688
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1550 TGCATGTTTGAACAGACACTGTATCT 1575
                                                                                                                                                                             Submitted (24-APR-1992) Kozo Ishizaki, Government Industrial Development Laboratory-Hokkaido, Applied Chemistry; 2-17-2-1 Tsukisamu-Higashi Toyohira-ku, Sapporo, Hokkaido 062, Japan (Tel:011-857-8923, Fax:011-857-8900)
                                                                                                                                                                                                                                                                                                                                                                                             Ohgiya,S., Ishizaki,K. and Shinriki,N.
Molecular cloning of guinea pig CYPIA1: complete primary structure and fast mobility of expressed protein on electrophoresis Biochim. Biophys. Acta 1216 (2), 237-244 (1993)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GPIP451A1 2674 bp mRNA linear ROD 2 Cavia porcellus mRNA for cytochrome P450 1A1, complete cd D11043.1 GI:220305 cytochrome P450 1A1. Cavia porcellus (strain:Hartley) cDNA to mRNA, clone:GPc1 Cavia porcellus
                                                                                                                                                                                                                                                                                                  Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Rodentla; Hystricognathi; Caviidae; Cavia.
                                                                                                                                                                                                                                                                                                                                                        (bases 1 to 2674)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        51A1 2674 bp. mRNA linear ROD 26-
porcellus mRNA for cytochrome P450 1A1, complete cds.
/db_xref="taxon:10141"
/clone="GPc1"
126. .1676
                                                                            /organism="Cavia porcellus"
/strain="Hartley"
                                                                                                                                                            Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    <14213. .>15448
/gene="MZB10.5"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GIGLRYGQGGSSQESSSTQRDKGKSSAVPQGSTSNSNISFQSITELAPR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ADVYSFGILVLEVISGNSSTRAAFGDEYMVLVEWVWKLREERRLLECVDÞELTKFPAD
EVTRFIKVALFCTQAAAQKRPNMKQVMEMLRRKELNLNEDALTEPGVYRGVNRGRNHR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RDIKASNILLDSNFSPKIGDFGLAKLFPDNVTHVSTRVAGTVGYLAPEYALLGQLTKK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /translation="mcngsdrlggreaeeictnnvrvfsynslrsatdsfhptnrigg
Ggygyvfkgylrdggqvavkslsaeskggtreflteinlisnihhpnlvkliggcieg
nnrilvyeylennslasyllcsrsryvvldwskraaicvgtasglaflheevephyvh
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /note="similar to hypothetical protein GB:AAC27164
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /product="putative receptor ser/thr protein kinase"
/protein_id="AAD56317.1"
/db_xref="GI:5923666"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NLSPVAMGNKMVERVVNMRKLGPPRLTENGGRGSGKSSSAFNSLGYGRNLSKSSIDMA
IRHMDIRGMTGNLRPLVTKVPASSMYSVRSRPGSVSSSPVATSSTVSSSDPSVDNIN
ILCLLDGNEAENDDLLSERSYAASPRNQYPKFTS*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  marginal_
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        complement(10821. .10843)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /gene="MZB10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      12298. .12448,1
/gene="MZB10.4"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /note="similar to receptor kinase GB:S70769 [Arabidopsis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /note="exon predicted by xgrail, quality marginal"
<11221. .>12992
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /note="exon predicted by xgrail, quality
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /gene="MZB10.4"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            oin(11221
                                                                                                                                        2674
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (<11221.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1221. .11263,11488. .11600,11690.
.12448,12597. .12992)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 26;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          .11263,11488. .1
,12597. .>12992)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DB 8;
0.035;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             11600,11690. .11900,11982. .12219,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 85561;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    .11900,11982.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ROD 26-MAY-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    .12219
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0;
```

```
BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 9
S79865/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 polyA_signal
BASE COUNT 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                 MEDLINE
PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AUTHORS
TITLE
                                                                                      Query Match
Best Local :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local Similarity
                                                                        Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                JOURNAL
                                                                                                                                                                                              mRNA
                                                                                                                                                                                                                                                                                   gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1812 CCAGAGTACCAAACAGAAGATGG 1834
                610 TAAAAGTTCAGATTTTGTTTTT 631
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        185 CCAGAGTACCAAACAGAAGATGG 163
                                                                                                                                                                                                                                                                                                                                                                                                                                                 Yu,J. and Medof,M.E.

Characterization of the murine PIG-A promoter region high constitutive PIG-A gene expression in brain constitutive PIG-A gene expression in brain Res. Commun. 215 (2), 497-503 (1995)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Genomic,
S79865
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1077 bp DNA linear ROD 17-F PIG-A-synthetic element required to initiate glycolnositol phospholipid (GPI) anchor assembly (exon 1, promoter) [mice, genomic, 1077 nt].
                                                                                                                                                                                                                                                                                                                                                     GenBank staff at the National Library of Medicine created this entry (NCBI gibbsq 17236) from the original journal article. This sequence comes from Fig. 2.

Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Mammalia;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Mus sp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Mus sp.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          S79865.1 GI:1195529
                                                                                      Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Eukaryota;
                                                                                                                                                                                                                                                                                                                                                                                                                                   7487983
TAAAAGTTCAGATTTTGTTTTT 225
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (bases 1 to 1077)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    640 a
                                                                                                                                                           226 a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1.1%;
ilarity 100.0%;
Conservative (
                                                                      Conservative
                                                                                                                                                                                          /note-"synthetic element required to initiate glycoinositol phospholipid (GPI) anchor assembly" 938. .>997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /product="cytochrome p450 1A1"
/protein_id="BAA01794.1"
/protein_id="BAA01794.1"
/db_xref="G1:220306"
/translation="MSTSAMELLLTATIFCLYLWVVRIFRPOYPKGLKSPPGPWGWPL
IGHMLTLGKNPHLALTRLSARYGDVLQIRIGSTPVVVLSGLDTIRQALVRQGDDFKGR
PDLYSFTFISDGQSMTENDDSGPVWAARRILAQSALKSFSVASDPASVSSCYLEEHVK
KEAEYLIKKFQELMAGPGHFDPYRYVVYSVANVISAICFGQRYSHDDQULELIDLDIN
EFGEVTGSGNWSDFIPILRYLDSATWOTFKDLNRRFSYFIQKMIKEHYKTFEKGHIRD
TDSSLEHCQDRKLDKNANIQISDQKIIGIVLDLFGAGFDTITTAISWSLLYLYMNPR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2656. .2661
1 686 c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    IQKKIQEELDTVIGREROPQLADRPKLPYMEAFISEVFRYSSFMPFTIPHSTTKDTSL
NGFYIPKGCCIFVNQWQINHDQKLWGDPSVFRPERFLSPDGTVDKALSEKVTIFGLGK
RRCLGEVIGRWEVFLFLAILLQQLEFSTSPGVKIDMTPIYGLTMKYSRCEHFQAQTRP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FVLKCPEA*
                                                                                                                                                         /gene="PIG-A"
288 c
                                                                                                                                                                                                                                                                                              /organism-"Mus sp."
/db_xref-"taxon:10095"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Eutheria; Rodentia;
                                                                                                                                                                                                                                                                    /partia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       codon_start=1
                                                                                    1.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0;
                                                                    0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 23;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               661 g
                                                                                      Score 22;
Pred. No.
                                                                                                                                                       296 g
                                                                      Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Craniata; Vertebrata; | Sciurognathi; Muridae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ; DB 10;
o. 1.8;
                                                                                                                                                         267 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   687
                                                                                    DB 10;
6.7;
                                                                    0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 2674;
                                                                                                       Length 1077;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ROD 17-FEB-1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Euteleostomi;
Murinae; Mus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0;
                                                                    ç
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gáps
                                                                    Gaps
                                                                    0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0
```

SOURCE

밁 Š ORIGIN

В

RESULT 11 AL732475/c

DEFINITION

AL732475 165720 bp DNA linear ROD 25-JUN-2002 Mouse DNA sequence from clone RP23-202H24 on chromosome X, complete

Š

FEATURES

REMARK

```
BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               KEYWORDS
SOURCE
ORGANISM
망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ACCESSION
VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RESULT 10
AL663025
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Cocus
                                                                                                                Matches
                                                                                                                                    Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AUTHORS
                                                                                                                                                                                                                                                                                                                                          misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               source
100591
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   humquery stanger ac.uk Clone requests: clonerequest@sanger.ac.uk
On Mar 21, 2002 this sequence version replaced gi:18477424.
During sequence assembly data is compared from overlapping clones.
Where differences are found these are annotated as variations
together with a note of the overlapping clone name. Note that the
variation annotation may not be found in the sequence submission
corresponding to the overlapping clone, as we submit sequences with
only a small overlap as described above.
This sequence was finished as follows unless otherwise noted: all
regions were either double-stranded or sequenced with an alternate
chemistry or covered by high quality data (i.e., phred quality >=
30); an attempt was made to resolve all sequencing problems, such
as compressions and repeats; all regions were covered by at least
one plasmid subclone or more than one M13 subclone; and the
assembly was confirmed by restriction digest. The following
abbreviations are used to associate primary accession numbers given
in the feature table with their source databases: Em. EMBL; Sw:,
SWISSPROT; Tr:, TREMBL; Wp:, WORMPEP; Information on the WORMPEP
database can be found at
                                                  351 TGAGAAGGAGAAAGAAAAGATT 372
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RP23-404B19 It may be shorter because we sequence overlapping sections only once, except for a short overlap. The true left end of clone RP23-404B19 is at 1 in this sequence. The true left end of clone RP23-397J5 is at 99306 in this sequence. The true right end of clone RP23-397J5 is at 59853 in this sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Submitted (14-MAR-2002) Wellcome Trust Sanger Institute, Hinxton Cambridgeshire, CB10 1SA, UK. E-mail enquiries:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AL663025 101305 bp DNA linear ROD 14-MAR-2002 Mouse DNA sequence from clone RP23-404B19 on chromosome 11,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              http://www.sanger.ac.uk/Projects/C_elegans/wormpep RP23-404B19 is from the RPCI-23 Mouse PAC Library constructed by the group of Pieter de Jong. Trither details see http://www.chori.org/bacpac/home.htm
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Mus musculus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               complete sequence. AL663025
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          VECTOR: pBACe3.6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Tracey, A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; F
Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AL663025.7
                                                                                                                                       Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1 (bases 1 to 101305)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               IMPORTANT: This sequence is not the entire insert of clone
TGAGAAGGAGAAAGAAAAGATT 100612
                                                                                                                                                                                                                                                       þ
                                                                                                                                                                                                                                            /note="Sequence from uni-directional dGTP big
terminator reads only"
a 23727 c 23324 g 27052 t
                                                                                                                                                                                                                                                                                                                                       /clone_lib="RPCI-23"
22091. .22100
                                                                                                                                                                                                                                                                                                                                                                                                                    /organism="Mus musculus"
/db_xref="taxon:10090"
/chromosome="11"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1. .101305
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                               /clone="RP23-404B19"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GI:19572091
                                                                                                                                 1.0%;
                                                                                                       s; Score 22; DB; Pred. No. 5; 0; Mismatches
                                                                                                                                    DB 10;
5;
                                                                                                             0
                                                                                                                                                            Length 101305;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       in this sequence. in this sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Euteleostomi;
                                                                                                          0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Murinae;
                                                                                                             Gaps
                                                                                                                0
```

```
REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            VERSION
KEYWORDS
                                                                                                                                                                                                      RESULT 12
AL645626
                                                                 VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                       Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            BASE COUNT
ORIGIN
                                                 SOURCE
                                                                                                                                                          DEFINITION
                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SOURCE
                                                                                                                ACCESSION
                                                                                                                                                                                      COCUS
                                                                                                                                                                                                                                                                                                                                                                                     Best Loc
Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ORGANISM
                         ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      source
                                                                                                                                                                                                                                                                                                                                                                                                      Local
                                                                                                                                                                                                                                                                                                 109491 TAAAAGTTCAGATTTTGTTTTT 109470
                                                                                                                                                          AL645626
Mouse DNA
                                                                                                             sequence.
AL645626
                                                                                                                                                                                                                                                                                                                                                                                     Similarity
22; Conser
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 regions were either double-stranded or sequenced with an alternate chemistry or covered by high quality data (i.e., phred quality >= 30); an attempt was made to resolve all sequencing problems, such as compressions and repeats; all regions were covered by at least one plasmid subclone or more than one Ml3 subclone; and the assembly was confirmed by restriction digest. The following abbreviations are used to associate primary accession numbers given in the feature table with their source databases: Em:, EMBL; Sw:,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Where differences are found these are annotated as variations together with a note of the overlapping clone name. Note that the variation annotation may not be found in the sequence submission corresponding to the overlapping clone, as we submit sequences with only a small overlap as described above.

This sequence was finished as follows unless otherwise noted: all
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Cambridgeshire, CB10 15A, UK. E-mail enquiries: humquery@sanger.ac.uk Clone requests: clonerequest@sanger.ac.uk On Jun 26, 2002 this sequence version replaced gi:21614706.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Mus musculus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Submitted (25-JUN-2002) Wellcome Trust Sanger Institute, Hinxton Cambridgeshire, CB10 15A, UK. E-mail enquiries:
Eukaryota;
                       Mus musculus
                                                                      HTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   from the RPCI-23 Mouse PAC Library constructed by the group of Pieter de Jong. For further details see http://www.chori.org/bacpac/home.htm
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SWISSPROT; {\tt Tr:}, {\tt TREMBL}; {\tt Wp:}, {\tt WORMPEP}; {\tt Information} on the WORMPEP database can be found at
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Contact: humquery@sanger.ac.uk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Center code: SC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Center: Wellcome Trust Sanger Institute
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Phillimore, B.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Eukaryota;
Mammalia; 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AL732475.6
                                                                                           AL645626.10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     During sequence assembly data is compared from overlapping clones
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Web site:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              house mouse
                                              nouse mouse
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                VECTOR: pBACe3.6.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  from the RPCI-23 Mouse PAC
                                                                                                                                                                                                                                                                                                                           TAAAAGTTCAGATTTTGTTTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   46457
                                                                                                                                                                                                                                                                                                                                                                                   Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /www.sanger.ac.uk/Projects/C_elegans/wormpep RP23-202H24 is
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /clone_lib="RPCI-23"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /clone="RP23-202H24"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /chromosome="X"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /db_xref="taxon:10090"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /organism="Mus musculus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Location/Qualifiers
1. .165720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         http://www.sanger.ac.uk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ; Metazoa; Chordata;
Eutheria; Rodentia;
                                                                                                                                                          sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 33761 c
  Metazoa;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   to 165720)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GI:21615718
                                                                                           GI:21425601
                                                                                                                                                                                                                                                                                                                                                                                                        100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Genome Center
                                                                                                                                                                                                                                                                                                                                                                                                                                  1.0%;
                                                                                                                                                            from
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          34398 g 51104 t
                                                                                                                                                                                                                                                                                                                                                                                 ; Score 22; DB
b; Pred. No. 4.8
0; Mismatches
Chordata; Craniata; Vertebrata; Euteleostomi;
                                                                                                                                                            clone
                                                                                                                                                                                                                                                                                                                                         631
                                                                                                                                                          bp DNA
e RP23-397J5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Craniata; Vertebrata; Euteleostomi; Sciurognathi; Muridae; Murinae; Mus
                                                                                                                                                                                                                                                                                                                                                                                                                               DB 10;
                                                                                                                                                                                                                                                                                                                                                                                                        4.8;
                                                                                                                                                                                                                                                                                                                                                                                     0;
                                                                                                                                                                                                                                                                                                                                                                                                                             Length 165720;
                                                                                                                                                            on
n
                                                                                                                                                                               linear
                                                                                                                                                                                 ROD
                                                                                                                                                                                                                                                                                                                                                                                     0;
                                                                                                                                                                               12-JUN-2002
                                                                                                                                                          complete
                                                                                                                                                                                                                                                                                                                                                                                     0,
```

```
REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                             REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ACCESSION
VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 13
AC115692/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FEATURES
                                                                                                                                                                                                                                                                               REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   BASE COUNT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local
                                                                                                                                                                                                                                              AUTHORS
                                                                                                                                                                                                                                                                                                                    JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1286 TGAGAAGGAGAAAGAAAAGATT 1307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                351 TGAGAAGGAGAAAGAAAGATT 372
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         This sequence was finished as follows unless otherwise noted: all regions were either double-stranded or sequenced with an alternate chemistry or covered by high quality data (i.e., phred quality >- 30); an attempt was made to resolve all sequencing problems, such as compressions and repeats; all regions were covered by at least one plasmid subclone or more than one M13 subclone; and the assembly was confirmed by restriction digest. The following abbreviations are used to associate primary accession numbers given in the feature table with their source databases: Em:, EMBL; SW:, SWISSEROT; TT:, TREMBL; WP:, WORMPEP; Information on the WORMPEP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              humquery@sanger.ac.uk Clone requests: clonerequest@sanger.ac.uk On Jun 13, 2002 this sequence version replaced gi:19572018.

During sequence assembly data is compared from overlapping clones Where differences are found these are annotated as variations together with a note of the overlapping clone name. Note that the variation annotation may not be found in the sequence submission
                                                                                                      2 (bases 1 to 176725)
Birren, B., Linton, L., Nusbaum, C., Lander, E., Ali, A., Allen, N., Birren, B., Linton, L., Nusbaum, C., Lander, E., Ali, A., Allen, N., Anderson, S., Barna, N., Bastien, V., Bloom, T., Boguslavkiy, L., Boukhgalter, B., Brown, A., Camarata, J., Campopiano, A., Chang, J., Boukhgalter, B., Choepel, Y., Colangelo, M., Collins, S., Collymore, A., Chazaro, B., Choepel, Y., Colangelo, M., Collins, S., Collymore, A., Collins, C., Colangelo, M., Collins, S., Collymore, A., Collins, C., Collymore, A., Collins, C., Colangelo, M., Collins, S., Collymore, A., Collins, C., Colangelo, M., Collins, S., Collymore, A., Collins, C., Collins, 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     http://www.sanger.ac.uk/Projects/C_elegans/wormpep RP23-397J5 is from the RPCI-23 Mouse PAC Library constructed by the group of Pieter de Jong.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Submitted (12-JUN-2002) Wellcome Trust Sanger Institute, Hinxton Cambridgeshire, CB10 1SA, UK. E-mail enquiries:
                                         Faro,S.,
                                                                     Cook, A.,
                                                                                                                                                                                                                                                                                                                    Unpublished
                                                                                                                                                                                                                                                                                                                                                     Mus musculus, clone RP23-463Gl1
                                                                                                                                                                                                                                                                                                                                                                                                  Mammalia; Eutheria; Rodentia; Sciur
1 (bases 1 to 176725)
Birren, B., Nusbaum, C. and Lander, E.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Mus musculus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            HTG; HTGS_PHASE2; HTGS_DRAFT; HTGS_FULLTOP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AC115692 176725 bp
Mus musculus clone RP23-463G11,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        corresponding to the overlapping clone, as we submit sequences only a small overlap as described above.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Cambridgeshire, CB10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Whitehead, S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Eukaryota; Metazoa; Chordata;
Mammalia; Eutheria; Rodentia;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   house mouse.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AC115692.2 GI:21591964
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AC115692
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     database can be found at
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    VECTOR: pBACe3.6.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        45754
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (bases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             further details see http://www.chori.org/bacpac/home.htm
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Submission
Cooke,P., DeArellano,K., Dewar,K., Diaz,J.S., Dodge,S., Ferreira,P., FitzHugh,W., Gage,D., Galagan,J., Gardyna, Gord,S., Goyette,M., Graham,L., Grand-Pierre,N.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /organism="Mus musculus"
/db_xref="taxon:10090"
/chromosome="11"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /clone_lib="RPCI-23"
39003 c 39852 g 4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1. .170821
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         clone="RP23-397J5"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ocation/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1 to 170821)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 22;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        46212
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Craniata; Vertebrata; Euteleostomi; Sciurognathi; Muridae; Murinae; Mus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DB 10;
. 4.8;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WORKING DRAFT SEQUENCE,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           .8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 170821;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0
                                             Gardyna, S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             26-JUN-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 with
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0
```

```
Submitted (26-JUN-2002) Whitehead Institute/MIT Center for Genome Research, 320 Charles Street, Cambridge, MA 02141, USA On Jun 26, 2002 this sequence version replaced gi:19683243. All repeats were identified using RepeatMasker: Smit, A.F.A. & Green, P. (1996-1997) http://ftp.genome.washington.edu/RM/RepeatMasker.html
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Roman, J., Roy, A., Schauer, S., Schupback, R., Seaman, S., Severy, P., Smith, C., Spencer, B., Stange-Thomann, N., Stolyanovic, N., Talamas, J., Tesfaye, S., Theodore, J., Topham, K., Travers, M., Vassiliev, H., Viel, R., Vo, A., Wilson, B., Wu, X., Wyman, D., Young, G., Zainoun, J.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Barna, N., Bastien, V., Bloom, T., Boguslavkiy, L., Boukhgalter, B., Camarata, J., Chang, J., Chazaro, B., Choepel, Y., Collymore, A., Cook, A., Cooke, P., DeArellano, K., Dewar, K., Diaz, J.S., Dodge, S.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Research, 320 Charles Street, Cambridge, 3 (bases 1 to 176725)
Birren,B., Nusbaum,C., Lander,E., Ali,A.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Seaman, S., Severy, P., Spencer, B., Stange-Thomann, N., Stojanovic, N., Strauss, N., Subramanian, A., Talamas, J., Tesfage, S., Theodore, J., Topham, K., Travers, M., Travis, N., Trijllo, J., Vassiliev, H., Viel, R., Vo, A., Wilson, B., Wu, X., Wyman, D., Ye, W.J., Young, G.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Kamat, A., Karatas, A., Kells, C., LaRocque, K., Lamazares, R., Landers, T., Lehoczky, J., Levine, R., Lindblad-Toh, K., Liu, G., MacLean, C., Macdonald, P., Major, J., Marquis, N., Matthews, C., McCarthy, M., McEwan, P., McKernan, K., Meldrim, J., Meneus, L., McCarthy, M., McEwan, P., McKernan, K., Meldrim, J., Meneus, L., Mihova, T., Mlenga, V., Murpby, T., Naylor, J., Nguyen, C., Nicol, R., Norbu, C., Norman, C.H., O'Conner, No'Donnell, P., O'Neil, D., Oliver, J., Peterson, K., Phunkhang, P., Pierre, N., Pollara, V., Raymond, C., Retta, R., Rieback, M., Riley, R., Rise, C., Rogov, P., Roman, J., Rosetti, M., Roy, A., Santos, R., Schauer, S., Schupback, R., Separa, S., Schupback, R., Schupback, R., Separa, S., Schupback, R., Schupback, R., Separa, S., Schupback, R., Schupback, R., Separa, S., Schupback, R.,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Karatas, A. Kells, C., Landers, T., Levine, R., Lindblad-Toh, K., Liu, G., MacLean, C., Macdonald, P., Major, J., Matthews, C., McCarthy, M., Meldrim, J., Meneus, L., Mihova, T., Mlenga, V., McCarthy, M., Meldrim, J., Weneus, L., Mihova, T., Morena, C., Norman, C.H., Murphy, T., Naylor, J., Nguyen, C., Nicol, R., Norbu, C., Norman, C.H., OʻLover, J., Peterson, K., OʻConnor, T., OʻDonnell, P., OʻNell, D., Oʻliver, J., Peterson, K., Phunkhang, P., Pierre, N., Raymond, C., Retta, R., Rise, C., Rogov, P., Phunkhang, P., Pierre, N., Raymond, C., Retta, R., Rise, C., Rogov, P., Roman, J., Roy, A., Schauer, S., Schupback, R., Seaman, S., Severy, P., Roman, J., Roy, A., Schauer, S., Schupback, R., Seaman, S., Severy, P., Roman, J., Roy, A., Schauer, S., Schupback, R., Seaman, S., Severy, P., Roman, J., Roy, A., Schauer, S., Schupback, R., Seaman, S., Severy, P., Roman, J., Roy, A., Schauer, S., Schupback, R., Seaman, S., Severy, P., Roman, J., Roy, A., Schauer, S., Schupback, R., Seaman, S., Severy, P., Roman, J., Roy, A., Schauer, S., Schupback, R., Seaman, S., Severy, P., Roman, J., Roy, A., Schauer, S., Schupback, R., Seaman, S., Severy, P., Roman, J., Roy, A., Schauer, S., Schupback, R., Seaman, S., Severy, P., Roman, S., Severy, P., Roy, R., Seaman, S., Seaman, S., Severy, P., Roy, R., Seaman, S., Seaman, S., Severy, P., Roy, R., Seaman, S., S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Submitted (22-MAR-2002) Whitehead Institute/MIT Center for Genome Research, 320 Charles Street, Cambridge, MA 02141, USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Zainoun,J., Zembek,L., Zimmer,A. and Zody,M.
Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Faro, S., Ferreira, P., FitzGerald, M., Gage, D., Galagan, J., Gardyna, S., Gord, S., Graham, L., Grand-Pierre, N., Hagos, B., Gardyna, S., Gord, S., Graham, L., Johnson, R., Jones, C., Kamat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Lembek, L., Zimmer, A. and Zody, M.
                                                                                                                                                                                                                                                                                                                                                                                                                                                     NOTE: This is a 'working draft' sequence. It currently consists of 11 contigs. Gaps between the contigs are represented as runs of N. The order of the pieces
                                                                                                                                                                                                                                                                                                              is believed to be correct as given, however the sizes of the gaps between them are based on estimates that have
by the finished sequence as soon as it is
the accession number will be preserved.
                                                                                                                                                       provided by the submittor. This sequence will be replaced
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Chemistry: Dye-terminator Big Dye; 100% of re Assembly program: Phrap; version 0.960731
Consensus quality: 173635 bases at least 040
Consensus quality: 174406 bases at least 030
Consensus quality: 175011 bases at least 020
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Insert size: 210000; agarose-fp Insert size: 175725; sum-of-contigs Quality coverage: 7.5 in Q20 bases; Quality coverage: 9.0 in Q20 bases;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequencing vector: Plasmid; n/a; 100% of reads
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Contact: sequence_submissions@genome.wi.mit.edu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Web site: http://www-seq.wi.mit.edu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Center: Whitehead Institute/ MIT Center for Genome Research
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Center code: WIBR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ---- Project Information
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Horton,L., Hulme,W., Iliev,I., Johnson,R.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   -- Genome Center
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Lander, E., Ali, A., Allen, N.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        100% of reads
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           sum-of-contigs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           agarose-fp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            It currently
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Boukhgalter, B.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Anderson, S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Kamat,A.,
VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ğ
```

COMMENT

REFERENCE AUTHORS

JOURNAL

```
RESULT 14
AL844855/c
                                                              DEFINITION
                                                                                                                                                                                                                                                                                 ORIGIN
                                                                                                                                                                                                                                                                                              BASE COUNT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FEATURES
                                ACCESSION
                                                                                Locus
                                                                                                                                                                                                                      Matches
                                                                                                                                                                                                                                    Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                misc_feature
                                                                                                                                                                                                                                                                                                                                                           misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                       misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                      misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         misc_teature
                                                                                                                                                                                                                                   Local
                                                                                                                                                          27103 TTCACATCTCCAGGTATATGCA 27082
                                             AL844855 221729 bp DNA 1
Mus musculus chromosome 2 clone RP23-113K9,
PROGRESS ***, 4 unordered pieces.
AL844855.6 GI:22416226
HTG; HTGS_PHASE1; HTGS_ACTIVEFIN; HTGS_DRAFT; HTGS_FULLTOP
                                AL844855
                                                                                                                                                                                                                                    Similarity
                                                                                                                                                                       TTCACATCTCCAGGTATATGCA 478
                                                                                                                                                                                                                                                                                                50598
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             139126 139225; gap of 100 bp
139226 171953; contig of 32728 bp in length
171954 172053; gap of 100 bp
172054 176725; contig of 4672 bp in length.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          105755 105854:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           171954 172053: gap of 100 r
                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               L05855
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          78672 78771:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     70415 70514: gap of 70515 78671: con:
                                                                                                                                                                                                                                                                                                þ
                                                                                                                                                                                                                                                                                                                                                          /note="assembly_fragment"
172054. .176725
                                                                                                                                                                                                                                                                                             vector_side:right"
37436 c 36344 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                      /note="assembly_fragment"
78772. .105754
                                                                                                                                                                                                                                                                                                                                                                                          139226.
                                                                                                                                                                                                                                                                                                                                                                                                                         105855. .139125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      70515
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     21912.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   14944.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  11205
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       vector_side:left"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            clone_end:SP6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /organism="Mus musculus"
/db_xref="taxon:10090"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              location/Qualifiers
                                                                                                                                                                                                                                                                                                                                           'note="assembly_fragment
                                                                                                                                                                                                                                                                                                                                                                                                     note="assembly_fragment"
                                                                                                                                                                                                                                                                                                                                                                                                                                    note="assembly_fragment"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   note="assembly_fragment"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 'note="assembly_fragment"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                note="assembly_fragment"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /note="assembly_fragment"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           note="assembly_fragment"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         note="assembly_fragment"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      clone_lib="RPCI-23 Female Mouse BAC"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /clone="RP23-463G11"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            100 bp
100 bp
14943: contig of 3639 b
14943: gap of
21811
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         62256:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   21911: gap of 100 bp
62156: contig of 40245 bp in length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                9781:
                                                                                                                                                                                                               100.08; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        100 bp
139125: contig of 33271 bp in length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     771: gap of 100 bp
105754: contig of 26983 bp in length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    156: gap of 100 bp
70414: contig of 8158 bp in length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         9681: contig of 9681 bp in length
11: gap of 100 bp
11:104: contig of 1323 bp in length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      .7867:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     .62156
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   .2181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    .70414
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                .14843
                                                                                                                                                                                                                                                                                                                                                                                          .171953
                                                                                                                                                                                                                                                                                              36344 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    p of 100 bp contig of 8157 bp in length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                p of 100 bp contig of 6868 bp in length
                                                                                                                                                                                                                                   Score 22;
Pred. No.
                                                                                                                                                                                                                      Mismatches
                                                                                                                                                                                                                                                                                                51341 t
                                                                                                                                                                                                                                                 DB 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              bp in
                                                                                                                                                                                                                      0;
                                                                                                                                                                                                                                                                                                1006 others
                                                                                                                                                                                                                                                   Length 176725;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 length
                                                                                                                                                                                                                      Indels
                                                              linear HTG 17
*** SEQUENCING
                                                                             HTG 17-AUG-2002
                                                                                                                                                                                                                      0;
```

0,

```
Ş
                                                                                                                        BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AUTHORS
TITLE
                                                                 Query Match
Best Local (
                                            Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         JOURNAL
                                                                                                                                                                                                   misc_feature
                                                                                                                                                                                                                                                              misc_feature
                                                                                                                                                                                                                                                                                                                       misc_feature
                                                                                                                                                                                                                                                                                                                                                                                  misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     source
                                                               Local
    529 CTGTGAATTTTGGGTAAATTGA 550
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Chemistry: Dye-terminator; 99% of reads Chemistry: Dye-primer Big Dye; 0% of reads Consensus quality: 221373 bases at least Q40 Consensus quality: 221407 bases at least Q30 Consensus quality: 221414 bases at least Q20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Cambridgeshire, CB10 15A, UK. E-mail enquiries: humquery@sanger.ac.uk Clone requests: clonerequest@sanger.ac.uk On Aug 21, 2002 this sequence version replaced gi:22265580.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Insert size: 221429; sum-of-contigs
Insert size: 225992; 3.1% error; agarose-fp
Quality coverage: 7.94x in Q20 bases; sum-of-contigs Quality
coverage: 7.85x in Q20 bases; agarose-fp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Mus musculus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Submitted (16-AUG-2002) Wellcome Trust Sanger Institute, Hinxton
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Assembly program: XGAP4; version 4.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Center project name:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Contact: humquery@sanger.ac.uk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Center: Wellcome Trust Sanger Institute
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Phillimore, B.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Web site:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Center code: SC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               house mouse.
                                                             Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          arbitrary. Gaps between the contigs are represented as runs of N, but the exact sizes of the gaps are unknown. This record will be updated with the finished sequence as soon as it is available and the accession number will be preserved.
                                                                                                                                            65809
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NOTE: This is a 'working draft' sequence. It currently consists of 4 contigs. The true order of the pieces is not known and their order in this sequence record is
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (bases 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                144378 144477:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     126680 126779:
126780 14437
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      184551 184650: gap of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Submission
                                                                                                                                            Q
                                                                                                                                      fragment_chain:1"
46520 c 46332 g
                                                                                                                                                                                                                                                                           /note="assembly_fragment:01671
fragment_chain:1"
                                                                                                                                                                                                     184651.
                                                                                                                                                                                                                   /note="assembly_fragment:03107
fragment_chain:1"
                                                                                                                                                                                                                                                                                                                       /note="assembly_fragment:02731
fragment_chain:1"
126780. .144377
                                                                                                                                                          /note="assembly_fragment:00406
fragment_chain:1"
                                                                                                                                                                                                                                                                                                                                                                                     1. .126679
                                                                                                                                                                                                                                                                                                                                                                                                                                          /organism="Mus musculus"
/db_xref="taxon:10090"
/chromosome="2"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Location/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  http://www.sanger.ac.uk
                                                                                                                                                                                                                                                                                                                                                                                                     clone_lib="RPCI-23"
                                                                                                                                                                                                                                                                                                                                                                                                                     clone="RP23-113K9"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                to 221729)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ·-- Summary Statistics
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                184550:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 100 by 144377: contig of 17598
                                                             100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     26679: contig of 126679 bp in length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Genome Center
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Project
                                                                                                                                                                                                                                                              .184550
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                gap of
                                    0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ap of 100 bp
contig of 37079
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          contig of 40073
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             bM113K9
                                                             Score 22; DB 2;
Pred. No. 4.7;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Information
                                            Mismatches
                                                                                                                                          62768 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                100 bp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       đđ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            bp in length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 bp in length
                                                                               Length 221729;
                                                                                                                                          300 others
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       in length
                                          Indels
                                          0;
                                        0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LOCUS
DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 15
AC125049
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           95515 CTGTGAATTTTGGGTAAATTGA 95494
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Chemistry: Dye-primer ET; 0% of reads Chemistry: Dye-terminator Big Dye; 100% of reads Assembly program: Phrap; version 0.990319 Consensus quality: 223685 bases at least 040 Consensus quality: 224340 bases at least Q30 Consensus quality: 224800 bases at least Q20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AC125049 228443 bp DNA linear HTG Mus musculus chromosome UNK clone RP23-367C15, WORKING SEQUENCE, 14 unordered pieces.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Quality coverage: 0.00 in Q20 bases; agarose-fp Quality coverage: 10.66 in Q20 bases; sum-of-contigs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               sequencing vector: M13; 08
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Center project name: M_BA0367C15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Web site:http://genome.wustl.edu/gsc/index.shtml
Contact: submissions@watson.wustl.edu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Submitted (20-JUN-2002) Genome Sequencing Center, 4444 Forest Park Parkway, St. Louis, MO 63108, USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         McPherson, J.D. and Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       McPherson, J.D. and Waterston, R.H. The sequence of Mus musculus clone
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Eukaryota; Metazoa; Chordata;
Mammalia; Eutheria; Rodentia;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Mus musculus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Insert size: 216000; agarose-fp
Insert size: 227586; sum-of-contigs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Center code: WUGSC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Center: Washington University Genome Sequencing Center
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Unpublished
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           HTG; HTGS_PHASE1; HTGS_DRAFT; HTGS_FULLTOF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AC125049.1 GI:21490490
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           house mouse.
                                                                                                                                                                                                                                                                                                                                    arbitrary. Gaps between the contigs are represented as runs of N, but the exact sizes of the gaps are unknown. This record will be updated with the finished sequence as soon as it is available and the accession number will be preserved.
                                                                                                                                                                                                                                                                                                                                                                                                                                   NOTE: This is a 'working draft' sequence. It currently consists of 14 contigs. The true order of the pieces is not known and their order in this sequence record is
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (bases 1 to 228443)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (bases 1 to 228443)
                                          10585
10685
15441
15541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                vector:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ---- Genome Center -----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Project Information
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              and Waterston, R.H.
                                                                                                                                                                                                                                                                                                                     1091:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                plasmid; 100%
                                                    gap of
contig
                                                                                                                gap of contig
                                                                                                                                                                                                                 contig
gap of
                                                                                                                                                                                                                                                                               gap of contig
                                                                                                                                                                                                                                                          gap of
                                                                                                                                                                             gap of
                                      contig
                                                                                                                                                          contig
                                                                                                                                                                                                 contig
                                                                                                                                                                                                                                                                                                                     contig
  unknown
of 6724
                                                                                                                                                          unknown
of 1883
                                                                                                                                                                                                                                                                               unknown
of 1476
                                                                                                                                                                                                                                      of.
                                                                                                                                                                                                                                                                                                                   of 1091
                                                                                                                      of
                                                                                                                                                                                                 of
                                                                               of 4756
                                                                                                   unknown
                                                                                                                                          unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Craniata; Vertebrata; Euteleostomi; Sciurognathi; Muridae; Murinae; Mus
                                                                                                                    2632
                                          3118
                                                                                                                                                                                                   1501
length
bp in ]
                                                                           length
bp in length
                                                                                                                    bp in
                                                                                                                                                                                                                                                                             bp in length
                                                                                                                                                                                                                                                                                                                   bp in length
                                      pp in
                                                                                                                                                      length
bp in length
                                                                                                                                                                                                 bp in
                                                                                                                                                                                                                                        bp in
                                                                                                                                                                                                                                                          length
                                                                                                                                                                                                                                                                                                 length
                                                             length
                                                                                                                                      length
                                                                                                                                                                                                                   Length
                                                                                                                                                                                                                                    length
                                      length
                                                                                                                    length
                                                                                                                                                                                               length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           HTG 20-JUN-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DRAFT
```

```
Search completed: June 24, 2003, 16:43:03 Job time: 3717 secs
                                                                           멍
                                                                                                         Ş
                                                                                                                                                                                                                       BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FEATURES
                                                                                                                                         Ouery Match 1.0%; Score 22; DB 2; Length 228443; Best Local Similarity 100.0%; Pred. No. 4.7; Matches 22; Conservative 0; Mismatches 0; Indels 0,
                                                                                                                                                                                                                                                                                                                                                                                                                      misc_feature
                                                                                                                                                                                                                                                                        misc_feature
                                                                                                                                                                                                                                                                                                            misc_feature
                                                                                                                                                                                                                                                                                                                                                misc_feature
                                                                                                                                                                                                                                                                                                                                                                                      misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                           misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              source
                                                                     66846 a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                25583
37960
38060
62482
62582
98115
98215
227713
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      37959: contig of 12377 bp in length 7960 38059: gap of unknown length 8060 62481: contig of 24422 bp in length 2482 62581: gap of unknown length 2582 98114: contig of 35533 bp in length 8115 98214: gap of unknown length 8215 227712: contig of 129498 bp in length 8215 227712: contig of 129498 bp in length 87713 228443: contig of 631 bp in length 7813 228443: contig of 631 bp in length 1813 228443: contig of 631 bp in length 1913 228443: contig of 631 bp in length 1913 228443: contig of 631 bp in length 1928443
                                                                                                                                                                                                                                                                                                            38060. .62481

'note="assembly_name:Contig56"

62582. .98114

/note="assembly_name:Contig57"

98215. .227712
                                                                                                                                                                                                                                  /note="assembly_name:Contig58"
227813. .228443
/note="assembly_name:Contig14"
47680 c 46061 g 66469 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /organism="Mus musculus"
/db_xref="taxon:10090"
/chromosome="UNK"
/clone="RP23-367C15"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2768. .4268
/note="assembly_name:Contig45"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         'note="assembly_name:Contig49"
5970. .7852
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       .192. .2667
/note="assembly_name:Contig43"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      note="assembly_name:Contig50"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           note="assembly_name:Contig52"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  note="assembly_name:Contig17"
                                                                                                                                                                                                                                                                                                                                                                                                 e="assembly_name:Contig55"
                                                                                                                                                                                                                                                                                                                                                                                                                      e="assembly_name:Contig54"
3. _.37959
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   c="assembly_name:Contig51"
15. .15440
                                                                                                                                                                                                                                                                                                                                                                                                                                                           e="assembly_name:Contig53"
9. .25482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       .10584
                                                                                                                                                                                                                                    1387 others
                                                                                                                                             0;
                                                                                                                                           Gaps
                                                                                                                                             0;
```

		* A**)		: *,	
					*
					×
4				W.	
*51					
			9	· (i)	
0.1				e	
<u>.</u>					
	*				
*.		we.	₹	*	
			\$ 1		
		4			
<b>3</b>					
Q. Y					
					·
¥.		· Val		and the second second	
$i^T_{-\frac{n^2}{2}i^2}$					
*	A.			S para a	
			~ *		
· · · · · · · · · · · · · · · · · · ·				ν	•
å.			Y 7		
5.0 24 48			" , " , " ,		
4		* *			
6	le se ga control y		Y- "		
					41. 3
#1.					
			1		
	the state of the s				¥ .
		:			
is .					
1					÷.
A.J.			W		
				. (1)	
A.					
ing.					
A.				in the	•
'C .			e		
2'					
SI.	*				
500 N		•			· ·
		•			· ·
		•		• ()	
					**************************************
	*				
-	+20				1.0
1.			*		* 4
					*
	.186			8	Star man 2
		41	. 44.7		
			2 100 100	The state of the s	Market and Market and

Tumour suppressor Signal transductio Human ORF4403 cDNA

Arabidopsis HY2 lo

secreted pro

Human cancer relat Genomic amplicon o

Human prostate exp

exp

Human cancer relat

Arabidopsis thalia Mouse type II coll

Arabidopsis thalia
Tomato DHS coding
Tomato Leaf deoxyh
Construct comprisi
Drosophila virilis
Kidney cancer rela

Envelope protein g CMV RNA4 leader se

Human angiogenesis DNA transcription Plasmid pZU634 for Plasmid pZU634 for

Enterococcus faeca

Human nervous syst Soybean 515002 reg Chemically treated Human immune syste

Nucleotide sequenc Methanococcus jann

Human bone marrow Human foetal liver Probe #17156 for g Arabidopsis mature

luman brain expres

```
Minimum DB :
Maximum DB :
                                                                                                                                                                               Result
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Database :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Post-processing: Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       OM nucleic - nucleic search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Word size :
                                                                                                                                                              ŏ.
        400580
                                                                                                                                                                                                                                           score g
                                                                                                                                                                                                                                                                           Pred. No.
                                                                                                                                                             Score
                                                                                                                                  2160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              seq
                                                                                                                                                                                                                                        No. is the number of results predicted by chance to have a greater than or equal to the score of the result being printed, serived by analysis of the total score distribution.
     2022
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              length: 0
length: 2000000000
                                                                                                                                                             Query
Match
     100.0
14.7
1.3
1.0
1.0
1.0
1.0
0.9
0.9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     June 24, 2003, 14:17:04; Search time 335 Seconds (without alignments) 14520.347 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          OLIGO_NUC Gapop 60.0 , Gapext 60.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US-09-870-406A-32
2160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       11:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2185239 seqs, 1125999159
                                                                                                                                                                                                                                                                                                 1: \( \sins2\) gegdata\( geneseq\) geneseqn \( -\emb\) \( \text{NA1980} \) DAT: *
2: \( \sins2\) gegdata\( geneseq\) geneseqn \( -\emb\) \( \text{NA1981} \) DAT: *
3: \( \sins2\) gegdata\( geneseq\) geneseqn \( -\emb\) \( \text{NA1981} \) DAT: *
3: \( \sins2\) gegdata\( geneseq\) geneseqn \( -\emb\) \( \text{NA1983} \) DAT: *
3: \( \sins2\) gegdata\( geneseq\) geneseqn \( -\emb\) \( \text{NA1984} \) DAT: *
3: \( \sins2\) gegdata\( geneseq\) geneseqn \( -\emb\) \( \text{NA1984} \) DAT: *
5: \( \sins2\) gegdata\( geneseq\) geneseqn \( -\emb\) \( \text{NA1984} \) DAT: *
5: \( \sins2\) gegdata\( geneseq\) geneseqn \( -\emb\) \( \text{NA1984} \) DAT: *
3: \( \sins2\) gegdata\( geneseq\) geneseqn \( -\emb\) \( \text{NA1984} \) DAT: *
3: \( \sins2\) gegdata\( geneseq\) geneseqn \( -\emb\) \( \text{NA1984} \) DAT: *
3: \( \sins2\) gegdata\( geneseq\) geneseqn \( -\emb\) \( \text{NA1984} \) DAT: *
10: \( \sins2\) gegdata\( geneseq\) geneseqn \( -\emb\) \( \text{NA1991} \) DAT: *
11: \( \sins2\) gegdata\( geneseq\) geneseqn \( -\emb\) \( \text{NA1991} \) DAT: *
12: \( \sins2\) gegdata\( geneseq\) geneseqn \( -\emb\) \( \text{NA1991} \) DAT: *
13: \( \sins2\) gegdata\( geneseq\) geneseqn \( -\emb\) \( \text{NA1991} \) DAT: *
14: \( \sins2\) gegdata\( geneseq\) geneseqn \( -\emb\) \( \text{NA1991} \) DAT: *
15: \( \sins2\) gegdata\( geneseq\) geneseqn \( -\emb\) \( \text{NA1991} \) DAT: *
16: \( \sins2\) gegdata\( geneseq\) geneseqn \( -\emb\) \( \text{NA1991} \) DAT: *
17: \( \sins2\) gegdata\( geneseq\) geneseqn \( -\emb\) \( \text{NA1991} \) DAT: *
18: \( \sins2\) gegdata\( geneseq\) geneseqn \( -\emb\) \( \text{NA1991} \) DAT: *
19: \( \sins2\) gegdata\( geneseq\) geneseqn \( -\emb\) \( \text{NA1991} \) DAT: *
19: \( \sins2\) gegdata\( geneseq\) geneseqn \( -\emb\) \( \text{NA1991} \) DAT: *
10: \( \sins2\) gegdata\( geneseq\) geneseqn \( -\emb\) \( \text{NA1991} \) DAT: *
11: \( \sins2\) gegdata\( geneseq\) geneseqn \( -\emb\) \( \text{NA1991} \) DAT: *
12: \( \sins2\) gegdata\( geneseq\) geneseqn \( -\emb\) \( \text{
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              N_Geneseq_101002:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           gaattccccacgtcaacgtg.....tcgtctctacctaatcaaca 2160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GenCore version 5.1.6 Copyright (c) 1993 - 2003 Compugen Ltd
                                                                                                                                                              Length
                                 1232
1272
                                                                                                                                                              В
                                                                                                                                                              Ð
                  ABA91766
AAC38032
ABA91752
ABA91743
ABA91751
AAC42595
AAC50780
ABA91744
                                                                                                                                                                                                            SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              4370478
Arabidopsis |
Arabidopsis |
Arabidopsis |
Arabidopsis |
Arabidopsis |
Arabidopsis |
Arabidopsis |
Arabidopsis |
Arabidopsis |
Arabidopsis |
Arabidopsis |
Arabidopsis |
                                                                                                                                                           Description
 phytoc
thalia
bilive
chromo
bilive
thalia
thalia
chromo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RESULT 1
ABA91766
   0000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ဂ ဂ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     o.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              exon
                                                                                                                                                                                                                                        Key
                                                                                                                             exon
                                                                                                                                                                                                                                                                                       Arabidopsis thaliana.
                                                                                                                                                                                                                                                                                                                   HY2; biliverdin reductase; phytochromobilin synthase; phytochrome; phytofluor; plant; enzyme; gene; ds.
                                                                                                                                                                                                                                                                                                                                                                                                     07-MAY-2002
                                                                                                                                                           transit_peptide
                                                                                                                                                                                                                                                                                                                                                                     Arabidopsis phytochromobilin synthase HY2 gene.
                                                                                                                                                                                                                                                                                                                                                                                                                                     ABA91766;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ABA91766 standard;
                                                                            intron
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (first entry)
                                                                                                                                                   /*tag= a
/gene= "HY2"
/product= "Phytoch
/note= "contains i
e 248..382
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /"\use 1
/number= 1
470..652
/*tag= d
                              /number-
653..769
                                                                                                         /*tag= k
153..469
/*tag= c
                                                                                                                                                                                                                                           248..1916
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1148
1609
1609
2917
3918
4845
6470
9238
11461
11461
11462
17959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
217959
2
                                                                                                                                                                                                                                                     Location/Qualifiers
/number-
                /*tag=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           895
                                                                                                            c
                                                                                                                                            ۵
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2160
                                                                                                                                                                        "Phytochromobilin_synthase"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAAD02175
AAX13099
ABL54342
ABL32575
ABA1613942
AAI613940
AAX91990
AAX91209
ABA3173300
ABA38690
AAAX217390
AAAX217304
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AAQ21605
AAQ63807
AAC54936
AAF32048
AAF32048
ABK88367
AAQ86758
AAT72154
ABC67030
ABQ67030
ABQ67030
ABC83366
AAD02175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ABN60565
ABQ63282
ABN62843
ABV53545
ABN64708
AAC53707
AAQ99867
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ABA91750
AAC25855
AAS46657
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ABK31324
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ABN79456
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ALIGNMENTS
```

```
08-JUN-2000;
26-FEB-2001;
29-MAY-2001;
                                    05-JUN-2001;
                                                     13-DEC-2001
                                                                   WO200194548-A2
                                                                                                         variation
                                                                                                                                                                                                                                                                                                      exon
                                                                                                                                       variation
                                                                                                                                                                     variation
                                                                                                                                                                                                    variation
                                                                                                                                                                                                                                           variation
                                                                                                                                                                                                                                                                                variation
                                                                                                                                                                                                                                                                                                                                                   exon
                                                                                                                                                                                                                                                                                                                                                                                                                                             exon
                                                                                                                                                                                                                                                                                                                                                                                                exon
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        exon
                                                                                                                                                                                                                                                                                                                            intron
                                                                                                                                                                                                                                                                                                                                                                         intron
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           exon
                                                                                                                                                                                                                                                                                                                                                                                                                      intron
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   intron
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 intron
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              intron
    ; 2000US-210286P.
; 2001US-271758P.
; 2001US-0210286.
                                    2001WO-US18326
                                                                                                                           replace(1145,T)
/*tag= v
                                                                                                       replace(1910,T)
                                                                                                           /standard_name= "Single nucleotide polymorphism"
/note= "in intron, Landsberg erecta ecotype"
                                                                                                                                                                   replace(844,A)
                                                                                                                                                                          /standard_name= "S
/note= "in intron,
                                                                                                                                                                                                  replace(515,A)
                                                                                                                                                                                                       /standard_name= "Single nucleotide polymorphism"
/note= "amino acid change to Asn in Landsberg
erecta and WassilewsKija ecotypes"
                                                                                                                                                                                                                                            /standard_name= "Single nucleotide polymorphism"
/note= "inserted T at nucleotide 234 in Landsberg
erecta and Wassilewskija ecotypes"
                                                                                                                                                                                                                                                                                    /*tag= q
                                                                                                                                                                                                                                                                                                           1663.1742
/*tag= p
/number= 7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /*tag= g
/number= 3
947..1032
                                                                                        standard_name=
                                                                                                                                                     /standard_name=
                                                                                                                                                                                                                                       replace(364,T)
                                                                                                                                                                                                                                                                             replace(234,TT)
                                                                                                                                                                                                                                                                                                                                                                              /*tag= m
/number= 6
                                                                                                                                                                                                                                                                       *tag=
                                                                                                                                                                                                                                                                                                   742..2148
                                                                                                                                                                                                                                                                                                                                  'number=
                                                                                                                                                                                                                                                                                                                                         /*tag= o
                                                                                                                                                                                                                                                                                                                                                1612..1662
                                                                                                                                                                                                                                                                                                                                                               ′*tag= n
                                                                                                                                                                                                                                                                                                                                                                                                      ′number=
                                                                                                                                                                                                                                                                                                                                                                                                                           'number=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /*tag= f
/number= :
                                                                                                                                                                                                                                                                                                                                                                     524..1611
                                                                                                                                                                                                                                                                                                                                                                                              419..1523
                                                                                                                                                                                                                                                                                                                                                                                                              *tag=
                                                                                                                                                                                                                                                                                                                                                                                                                                    /*tag= k
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             770..851
                                                                                                                                                                                                                                                                                                                                                                                                                    345..1418
                                                                                                                                                                                                                                                                                                                                                                                                                                                   'number=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          'number=
                                                                                                                                                                                                                                                                                                                                                                                                                                                           *tag=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   *taq=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         *tag=
                                                                              "Single nucleotide polymorphism"
Wassilewskija ecotype"
                                                                                                                                                                        "Single nucleotide
on, Landsberg erecta
                                                                                                                                          "Single nucleotide polymorphism"
Landsberg erecta ecotype"
                                                                                                                                                                         erecta
                                                                                                                                                                         polymorphism"
a ecotype"
```

```
holophytochrome involves co-expressing a haem oxygenase, an apophytochrome and a ferredoxin-dependent bilin reductase in a cell, where the cell produces the photoactive holophytochrome and where the apophytochrome and/or the bilin reductase are expressed by heterologous nucleic acids. The cell may be an algal, yeast, bacterial, plant, insect or mammalian cell, and the bilin reductase is preferably an HY2 family bilin reductase.
                                                                                                                                                                                               gene encodes a ferredoxin dependent biliverdin reductase, phytochromobilin synthase (see AAM50863), that is related to a family of proteins found in oxygenic photosynthetic bacteria. The HY2 gene product is localised in the chloroplast. HY2 is an example of bilin reductases of the invention, which are useful e.g for the conversion of biliverdin to phytobilin and the assembly of holophytochromes or phytofluors. The cloning of the Arabidopsis other plant species. A claimed method of producing a photoactive backers are also as a constant of the producing a photoactive collaboration.
                                                                                                                                                                                                                                                                                                                                                                                                    ecotype Columbia on chromosome 3, with single nucleotide polymorphisms found in ecotypes Landsberg erecta and Wassilewskija indicated. A positional cloning strategy was used to isolate the HY2 gene. For fine mapping, an hy2-1 mutant of ecotype Landsberg erecta was outcrossed with wild-type ecotype Columbia, and a mapping population was selected from F2 families with a long hypocotyl phenotype. This localised the gene to 2 overlapping bacterial artificial chromosome clones, and the gene was finally identified by sequencing of wild-type and mutant alleles. The HY2
Sequence 2160 BP; 645 A; 361 C;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Novel isolated HY2 family bilin reductase having bilin reductase activity, useful for converting biliverdin to phytobilin, and for producing a photoactive holophytochrome and/or phytofluor -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Example 3; Fig 3B; 102pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          WPI; 2002-195566/25.
P-PSDB; AAM50863.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (REGC ) UNIV CALIFORNIA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        present sequence is that of the HY2 gene of Arabidopsis thaliana
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             JC,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Kochi T,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Frankenberg N,
461 G;
693 T; 0 other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gambetta GA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Montgomery BL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              for
                                                                                                                                                                                                                             from
                                                                                                                                                                                                                                                                       of
e.g
```

밁 QV B ζQ.

Query Match Best Local : Matches 2160;

Local Similarity

100.0%;

Score 2160; Pred. No. 0;

DB

24; Length

2160;

0

Conservative

0,

밁 δÃ

361 361

AAAGAAAAGATTCTTACTTAGAGTCTCTGCTGTGTCGCATAAGGAATTCGCAGAGTCTGC

420 420

QY 뫄

В Š 망 δÃ В Ş

```
В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             δ
                                                                                                 1321
                                                                                                                                          1261
                                                                                                                    1321
                                                                                                                                                                                  1201
                                                                                                                                                                                                     1201
                                                                                                                                                                                                                             1141
                                                                                                                                                                                                                                                                      1081
                                                                                                                                                                                                                                                                                           1081
                                                                                                                                                                                                                                                                                                                1021
                                                                                                                                                                                                                                                                                                                                   1021
                                                                                                                                                                                                                                                                                                                                                       961
                                                                                                                                                                                                                                                                                                                                                                            961
                                                                                                                                                                                                                                                                                                                                                                                                 901
                                                                                                                                                                                                                                                                                                                                                                                                                  901
                                                                                                                                                                                                                                                                                                                                                                                                                                          841
                                                                                                                                                                                                                                                                                                                                                                                                                                                             841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    421
                                                                                             TCTGCGTTTCTAGAGTACTATCAGGTATATACTCAGCGGCCAAAAGCTAAGGTTTTATTG
                                                                                                                                                                                TCTTCGCTTAGGTCTTTGACTTTGCGGGTTTCATGGAGCCTGAGTATGATACTCCCATAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TACATTTCGTTAGTGTAGTGGAGGATTATATTTCTCATTGTTTCTTGCTGTGAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TTTAGAAGAAACCAGGAAAAGGATCGTTCTTGAACCTTCACATCTCCAGGTATATGCAAT
                                                     CAAGTATTATAACAAGATAATGTCCATATATCACAAATATGTCCTGAGGTGACCACAAGAAT
                                                                                                                                                                                                                                                                                                                                                      AGTTATGCTGGAGTTATCAGGTCTGTATTGTCCAAACTGATGTTCAATATTTTACTGTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AAGTGAGGGAGGAGATGGAACCATCTCATGTGAGAGCCAATTGTGAAGCACAACACAAGT
                                                                                                                                                                                                                                                                      CAAGTATTATAACAAGATAATGTCCATATATCACAAATATGCTGAGGTGACCACAAGAAT
                                1500
                                                                         1440
                                                                                               1380
                                                                                                                 1380
                                                                                                                                       1320
                                                                                                                                                             1320
                                                                                                                                                                                  1260
                                                                                                                                                                                                      1260
                                                                                                                                                                                                                                               1200
                                                                                                                                                                                                                                                                                         1140
                                                                                                                                                                                                                                                                                                               1080
                                                                                                                                                                                                                                                                                                                                  1080
                                                                                                                                                                                                                                                                                                                                                       1020
                                                                                                                                                                                                                                                                                                                                                                            1020
             1500
                                                     1440
                                                                                                                                                                                                                           1200
                                                                                                                                                                                                                                                                                                                                                                                                 960
                                                                                                                                                                                                                                                                                                                                                                                                                   960
                                                                                                                                                                                                                                                                                                                                                                                                                                         900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                660
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     660
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              480
                                                                                                                                                                                                                                                                                                                                                                                                                                                              900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              600
RESULT 2
AAC38032
ID AAC3
XX AAC3
XX AC3
AC AAC3
XX Hybr
CKW Hybr
KW Prott
KW meta
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX Eplo
XX 
                                                                                                                                                                                                                                                                                                                         B 8
                                                                                                                                                                                                                                                                                                                                                                 B 64
B
                                                                                                                                                                                                                                                                                                                                                                                                                          QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δõ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             δõ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     β
δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δõ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δõ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δõ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             δõ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ρy
                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         뮰
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DЪ
25-FEB-1999;
05-MAR-1999;
09-MAR-1999;
23-MAR-1999;
25-MAR-1999;
29-MAR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1561
```

```
2101
                                     2041
                                                                                              1981
                                                                                                                                                                                                                                1741
 2101
                                                        2041
                                                                           1981
                                                                                                                1921
                                                                                                                                  1921
                                                                                                                                                     1861
                                                                                                                                                                                                             1801
                                                                                                                                                                                                                                                  1741
                                                                                                                                                                                                                                                                      1681
                                                                                                                                                                                                                                                                                       1681
                                                                                                                                                                        1861
                                                                                                                                                                                          1801
                                                                                                                                                                                                                                                                                                          1621
                                                                                                                                                                                                                                                                                                                             1621
                                                                                                                                                                                                                                                                                                                                                                                       1501
                                                                                                                                                                                                                                                                                                                                                                   1561
GAGAATCCTCGAGTATGATATGATTTAATGAAAATGTATTCGTCTCTACCTAATCAACA
                                     GATATATGTGAACAAGTCAGATTTCAGAGTCATCAACACAAGAGGACGTGAACTTAGGGA
                                                                                                                                                   TTGATTACTTTCCAGAGTACCAAACAGAAGATGGAACTGTAAGCGATAAACGAAGTATCA
                                                                                                                                                                                                                               CATTAGTGTCCCCATTATTAATTAGCTTGTGAAGATGTTGAAAATGATTTGAACAAATC
                                                                                                                                                                                                                                                                                                                                               ACAGACACTGTATCTGTATTGTTACAATGGATATTGATTTGGTGTTTGCAGGATCCTGGA
                                                                                                                                                                                                                                                                                                                                                                                     ACCTGACATGGCGAGCACAAAAGGTGATTTCATTTCCTTTTGTGTAATTTGCATGTTTGA
                                                                                     AGTAGGAATAAGAAAGAGCAGCATGAGGAGTCTCTCAGGTCTATCTGCATTTCAAGATGA
                                                                           AGTAGGAATAAGAAAGAGCAGCATGAGGAGTCTCTCAGGTCTATCTGCATTTCAAGATGA
                                                                                                                                                                                                                                                                    CATTAGTGTCCCCATTATTAATTAGCTTGTGAAGATGTTGAAAATGATTTGAACAAAATC
                                                                                                                                                                                                                                                                                                                                                                    1620
                                                                                                                                                                                                                                                                                                                                                                                       1560
                                                                                                                1980
                                                                                                                                                                         1920
                                                                                                                                                                                           1860
                                                                                                                                                                                                                                . 1800
                                                                                                                                                                                                                                                   1800
                                                                                                                                                                                                                                                                                                                              1680
                                                                                                                                                                                                                                                                                                                                                 1620
                                                                                                                                                                                                             1860
                  2160
                                                        2100
                                                                                             2040
                                                                                                                                                                                                                                                                      1740
                                                                                                                                                                                                                                                                                                            1680
                                      2100
                                                                           2040
```

```
Arabidopsis
                              AAC38032;
                                              AAC38032
                                              standard;
thaliana
              (first
                                              DNA;
              entry)
DNA
fragment
```

Hybridisation assay; genetic mapping; gene expression protein identification; signal transduction pathway; metabolic pathway; promoter; termination sequence; ss

SEQ Ħ Š.

06-SEP-2000 Arabidopsis thaliana 25-FEB-2000; 2000EP-0301439 99US-0121825. 99US-0123180. 99US-0123548. 99US-0125788. 99US-0126264. 99US-0126785.

		~~~~~~~	PR PR PR PR PR PR PR PR PR PR PR PR PR P	PR PR PR PR PR PR PR PR PR PR PR PR PR P
06 08 09 12 13 13 14 16 16	18 JUN-1 18 JUN-1 21 JUN-1 22 JUN-1 22 JUN-1 23 JUN-1 23 JUN-1 24 JUN-1 28 JUN-1 28 JUN-1 29 JUN-1 30 JUN-1 30 JUN-1 01 JUL-1 01 JUL-1	10 10 11 11 11 11 11 11 11 11 11 11 11 1		111000000
9-JUL- 9-JUL- 5-JUL- 13-JUL- 13-JUL- 14-JUL- 15-JUL- 16-JUL- 16-JUL- 16-JUL- 16-JUL- 17-JUL- 18-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL	3-JUN-1999 -JUN-1999 -JUN-1999 -JUN-1999 -JUN-1999 -JUN-1999 -JUN-1999 -JUN-1999 -JUN-1999 -JUN-1999 -JUN-1999 -JUN-1999 -JUN-1999	10 JUN 1999; 14 JUN 1999; 14 JUN 1999; 16 JUN 1999; 16 JUN 1999; 7 JUN 1999; 7 JUN 1999; 8 JUN 1999; 8 JUN 1999; 8 JUN 1999; 8 JUN 1999; 8 JUN 1999; 8 JUN 1999; 8 JUN 1999;	4 - MAY - A - MAY - A - MAY - A - MAY - A - MAY - B - MAY - 9 - MAY - 0 - MAY - 1 - MAY - 1 - MAY - 1 - MAY - 2 - MAY - 7 - MAY - 7 - MAY - 7 - MAY - 1 - JUN - 1 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JUN - 7 - JU	444177-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1
-199 -199 -199 -199 -199 -199 -199 -199	- 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	X N N N N N N N N N N N N N N N N N N N	MAY- MAY- MAY- MAY- MAY- MAY- MAY- MAY-	
999999999999999999999999999999999999999	9999	000 000 000 000 000 000 000 000 000 00	1999 1999 1999 1999 1999 1999 1999 199	199119911991199119911991199119911991199119911991199119911991199119911991199119911991199119911991199
3066 3066 3066 3066 3066 3066 3066 3066	00000000000000000000000000000000000000	1066 1066 1066 1066 1066 1066 1066		9 990S-0128734 9 990S-0128734 9 990S-0129845 9 990S-0130077 9 990S-0130449 9 990S-0130891 9 990S-0132404 9 990S-0132404 9 990S-0132408 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9
S-01	0-8-00-8-00-8-00-8-00-8-00-8-00-8-00-8	0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 -	- SD(- SD(- SD(- SD(- SD(- SD(- SD(- SD(	2006 2006 2006 2006 2006 2006 2006 2006
142 142 142 142 142 142 142 143 143 144 144 144 144 144 144 144 144	139 139 139 139 139 139 140 140 140 140 140 141 141 141 141	013:013:013:013:013:013:013:013:013:013:	0133013301301301301301301301301301301301	0113
390. 390. 390. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3920. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 3020. 302	463 750 763 8899 8899 353 354 695 695 695 695 823	904533 9453 9453 9453 9453 9453 9453 9453	4422 4422 476 476 512 512 535 535 535 535 535 535 535 535 535 53	1287 1287 1298 1300 1300 1304 1305 1308 1324 1324 1324 1324 1324 1324 1324 1324
			210814w014ca	134. 134. 145. 177. 179. 191. 191. 191. 191. 191. 191
	•			•
	•	,		
			•	
	<b>#</b>		•	
•				•
		<u> </u>		
ឆ ឆ ឆ ឆ ឆ ឆ ឆ ឆ ឆ ឆ ឆ ឆ ឆ	PR PR PR PR PR PR PR PR PR PR	77 PR PR PR PR PR PR PR PR PR PR PR PR PR	PR PR PR PR PR PR PR PR PR PR PR PR PR P	PR PR PR PR PR PR PR PR PR PR PR PR PR P
20 22 23 24 28 29 29 05 06 07	27 27 27 27 27 27 27 27 27 27 27 27 27 2	2000111111110000		
20-SEP 22-SEP 23-SEP 24-SEP 28-SEP 20-SEP 20-SEP 01-OCT 01-OCT 01-OCT	25-AUG- 26-AUG- 27-AUG- 27-AUG- 27-AUG- 27-AUG- 31-AUG- 31-AUG- 01-SEP-1 11-SEP-1 11-SEP-1 11-SEP-1 11-SEP-1	09-AUG 09-AUG 11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11-AUG-11	26-JUL 26-JUL 27-JUL 27-JUL 27-JUL 27-JUL 28-JUL 28-JUL 28-JUL 02-AUG 02-AUG 02-AUG 03-AUG 04-AUG 04-AUG 04-AUG 04-AUG 05-AUG	19-JUL- 19-JUL- 19-JUL- 19-JUL- 19-JUL- 20-JUL- 20-JUL- 21-JUL- 21-JUL- 21-JUL- 22-JUL- 22-JUL- 22-JUL- 22-JUL- 22-JUL- 23-JUL- 23-JUL- 23-JUL-
P-1: P-1: P-1: P-1: P-1: P-1: P-1: P-1:	-1-4-1-4-4-4-4-4-4-4-4-4-4-4-4-4-4-4-4-	-AUG- AUG- AUG- AUG- AUG- AUG- AUG- AUG-		119-JUL 119-JUL 119-JUL 119-JUL 119-JUL 20-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-JUL 21-J
1999 1999 1999 1999 1999 1999 1999 199	666 666 666 666 666 666 666 666 666 66	5666 5666 5667 5667 5667 5667 5667 5667	199 199 199 199 199 199 199 199 199 199	-199 -199 -199 -199 -199 -199 -199 -199
				JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-1999; JUL-19
166 166 166 166 166 166	166 666 666 666 666 666	000000000000000000000000000000000000000		
08-1 08-1 08-1 08-1 08-1 08-1 08-1 08-1	08-008-008-008-008-008-008-008-008-008-	SDE SDE SDE SDE SDE SDE SDE SDE SDE SDE	SD6	1066 1066 1066 1066 1066 1066 1066 1066
015 015 015 015 015 015 015 015 015 015	015 015 015 015 015 015 015 015 015 015	-01 -01 -01 -01 -01 -01 -01 -01 -01 -01	-01	S-001
5488 5488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 5548 55488 55488 55488 55488 55488 55488 55488 55488 55488 55488 554	056 088 106 106 108 108 108 130 130 143 193 193 193 193 193 193 193 193 193 19	474 474 479 481 483 483 483 483 483 483 483 483 483 483	4552 4552 4552 4552 4552 4552 4552 4552	99US-0144331. 99US-0144332. 99US-0144333. 99US-0144334. 99US-0144352. 99US-01443632. 99US-0144884. 99US-0145086. 99US-0145086. 99US-0145086. 99US-0145087. 99US-0145087.
		116. 35. 771. 119. 119. 119. 119. 119. 119. 119	224. 276. 276. 276. 276. 276. 276. 276. 276	331 332 333 334 335 335 335 335 335 335 335 335
	•	•		·
			•	
•				

```
δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ş
                                                                                                                                                                                                                                                                                                                                                  δõ
                                                                                                                                                                                                                                                                                                                                                                                                   В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  γ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\ta \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\ta \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \) \(\tau \
                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Matches 418;
                                            Arabidopsis biliverdin reductase HY2 gene PCR primer HY2SmaIrev.
                                                                                               07-MAY-2002
                                                                                                                                              ABA91752
                                                                                                                                                                                       ABA91752 standard;
HY2; biliverdin reductase; phytochromobilin synthase; plant;
                                                                                                                                                                                                                                                                                                                                                         2101
                                                                                                                                                                                                                                                                                                                                                                                                        1178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1058
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1741 AGGAGCTGCTAAGGGATTTCCTGTTCAATGGGGTGGATGAGTTAGGCACAAAAACATTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1861
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     938
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                878
                                                                                                                                                                                                                                                                                                                                 GAGAATCCTCGAGTATGATATGATTTTAATGAAAATGTATTCGTCTCTACCTAATCAACA
                                                                                                                                                                                                                                                                                                                                                                                                                              TTGTTTGAGTTACCATGCATTGTAGTTTTACAAGTGTAGCTCTCAGCCCTTCATCAAAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AGTAGGAATAAGAAAGAGCAGCATGAGGAGTCTCTCAGGTCTATCTGCATTTCAAGATGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TTGATTACTTTCCAGAGTACCAAACAGAAGATGGAACTGTAAGCGATAAACGAAGTATCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AGGAGCTGCTAAGGGATTTCCTGTTCAATGGGGATGAGTTAGGCACAAAAACATTCA
                                                                                                                                                                                                                                                                                                           GAGAATCCTCGAGTATGATATGATTTTAATGAAAATGTATTCGTCTCTACCTAATCAACA
                                                                                                                                                                                                                                                                                                                                                                                                     TTGTTTGAGTTACCATGCATTGTAGTTTTACAAGTGTAGCTCTCAGCCCTTCATCAAAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AGTAGGAATAAGAAAGAGCAGCATGAGGAGTCTCTCAGGTCTATCTGCATTTCAAGATGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                          (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  99US-0161992.
99US-0161993.
99US-0162142.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     99US-0160989.
99US-0161404.
99US-0161405.
99US-0161359.
99US-0161350.
99US-0161361.
99US-0161361.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            99US-0160815.
99US-0160980.
99US-0160981.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 99US-0160768.
99US-0160770.
99US-0160814.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                99US-0159294
99US-0159295
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        9908-0160767
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   99US-0160741
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        99US-0159637
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               990S-0159293
                                                                                                                                                                                     DNA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              14.7%;
                                                                                                                                                                                       36
                                                                                                                                                                                       ВP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 318; DB 21;
Pred. No. 1.4e-145;
0; Mismatches 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length 1308;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1860
                                                                                                                                                                                                                                                                                                           1297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2040
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1980
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1057
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1920
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1800
                                                                                                                                                                                                                                                                                                                                                                                                   1237
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  997
```

```
밁
                                                                                                            Ş
                                                                                                                                                                                                                                       The present sequence is that of primer HY2SmaIrev, which was used with primer mHY2BglIIfwd (see ABA91751) in the PCR amplification of mHY2, the mature portion (lacking the predicted chloroplast transit peptide sequence) of the HY2 gene (see ABA91766) of Arabidopsis thaliana. The reverse primer contains a 5' SmaI site. The PCR product was subcloned into the Escherichia coli expression vector DEEX-6-P1 to give pGEX-MHY2. Recombinant HYB2 mature protein was produced as a glutathione-S-transferase fusion, and purified by affinity chromatography. The Arabidopsis HY2 gene encodes a ferredoxin-dependent biliverdin reductase, phytochromobilin synthase (see AAM50863), that is related to a family of proteins found in coxygenic photosynthetic bacteria. HY2 is an example of HY bilin reductases of the invention, which are useful e.g. for the conversion of biliverdin to phytobilin and the assembly of holophytochromes or phytofluors.
                                                                                                                                              Query Match
Best Local S
Matches 28
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Novel isolated HY2 family bilin reductase having bilin reductase activity, useful for converting biliverdin to phytobilin, and for producing a photoactive holophytochrome and/or phytofluor -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      08-JUN-2000; 2000US-210286P
26-FEB-2001; 2001US-271758P
29-MAY-2001; 2001US-0210286
                                                                                                                                                                                                             Sequence 36 BP; 8 A; 10 C; 7 G; 11 T; 0 other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Example 1; Page 50; 102pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Lagarias JC,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (REGC ) UNIV CALIFORNIA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        05-JUN-2001; 2001WO-US18326
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Arabidopsis thaliana
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        enzyme; PCR; primer;
ABA91743 standard; DNA;
                                                                                                              1890 GATTTAACAGGACAATTTATCGGCTAAC 1917
                                                                               Similarity
                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Kochi T,
                                                                                                                                           1.3°; Pr
100.0%; Pr
22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Frankenberg
ВP
                                                                                                                                                              Score 28;
Pred. No.
                                                                                                                                                Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ž
                                                                                                                                                              DB 24;
0.0031;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gambetta GA,
                                                                                                                                                                           Length 36
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Montgomery
                                                                                                                                                0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           for
                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           BL;
```

```
RESULT 4
ABA91743
ID ABA91743;
XX
AC ABA91743;
XX
O7-MAY-2002 (first entry)
XX

Example Arabidopsis chromosome 3 CAPS marker cMZB10.18 (HY2) PCR primer.
XX

Example Arabidopsis chromosome 3 CAPS marker cMZB10.18 (HY2) PCR primer.
XX

Example Arabidopsis chromosome 3 CAPS marker; plant; enzyme;
XX

Example Arabidopsis thaliana.
XX

Example Arabidopsis thaliana.
XX

Example Arabidopsis thaliana.
XX

Example Arabidopsis thaliana.
XX

Example Arabidopsis thaliana.
XX

Example Arabidopsis thaliana.
XX

Example Arabidopsis thaliana.
XX

Example Arabidopsis thaliana.
XX

Example Arabidopsis thaliana.
XX

Example Arabidopsis thaliana.
XX

Example Arabidopsis thaliana.
XX

Example Arabidopsis thaliana.
XX

Example Arabidopsis thaliana.
XX

Example Arabidopsis thaliana.
```

0,

```
RESULT 5
ABA91751
                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                ρy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local S
          08-JUN-2000; 26-FEB-2001; 29-MAY-2001;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      amplified polymorphic sequence (CAPS) marker cMZBIO.18 of chromosome 3 of Arabidopsis thaliana. The primer pair includes a DdeI restriction endonuclease site. An hy2-1 mutant of ecotype Landsberg erecta was outcrossed with wild-type ecotype Columbia, and a mapping population was selected from F2 families with a long hypocotyl phenotype. PCR primer pairs (see ABA91735-48) for 7 CAPS markers were used in a map-based cloning of the HY2 gene. The HY2 locus was initially mapped to an interval of about 66 kb between the markers cMZBIO and cF3L24. Fine mapping localised the HY2 gene (see ABA91766) to 2 overlapping bacterial artificial chromosome clones, MZBIO.18 and F3L24.1. The HY2 gene encodes a ferredoxin-dependent
                                                                                                                                                                                        HY2; biliverdin reductase; phytochromobilin synthase; plant; enzyme; PCR; primer; ss.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    activity, producing
                                                                    05-JUN-2001; 2001WO-US18326
                                                                                                  13-DEC-2001.
                                                                                                                                  WO200194548-A2
                                                                                                                                                              Arabidopsis thaliana
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 biliverdin reductase, phytochromobilin synthase (see AAM50863), that is related to a family of proteins found in oxygenic photosynthetic bacteria. HY2 is an example of HY bilin reductases of the invention, which are useful e.g. for the conversion of biliverdin
                                                                                                                                                                                                                                      Arabidopsis biliverdin reductase HY2
                                                                                                                                                                                                                                                                     07-MAY-2002
                                                                                                                                                                                                                                                                                                     ABA91751;
                                                                                                                                                                                                                                                                                                                               ABA91751 standard; DNA; 30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence 22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ç
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            The present sequence is that of a primer that was used, with the primer given in ABA91744, in the PCR amplification of the cleave
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Novel isolated HY2 family bilin reductase having bilin reductase activity, useful for converting biliverdin to phytobilin, and for producing a photoactive holophytochrome and/or phytofluor -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         08-JUN-2000; 2000US-210286P.
26-FEB-2001; 2001US-271758P.
29-MAY-2001; 2001US-0210286.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Example 1; Page 49; 102pp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Lagarias
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (REGC ) UNIV CALIFORNIA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     05-JUN-2001;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         phytobilin and
                                                                                                                                                                                                                                                                                                                                                                                                                     762 CAATGCAGGTTTAACTTCAGCA 783
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2002-195566/25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Similarity
                                                                                                                                                                                                                                                                                                                                                                                                    CAATGCAGGTTTAACTTCAGCA 22
         ; 2000US-210286P.
; 2001US-271758P.
; 2001US-0210286.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        BP; 7 A; 5 C; 4 G; 6 T; 0 other;
                                                                                                                                                                                                                                                                    (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2001WO-US18326
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Kochi T,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   the assembly of holophytochromes or phytofluors
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Frankenberg N,
                                                                                                                                                                                                                                                                                                                               ВP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score 22;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Mismatches
                                                                                                                                                                                                                                   gene PCR primer mHY2BglIIfwd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2.8;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gambetta GA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            24;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 22
                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           the cleaved
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Montgomery BL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                             0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                             0,
```

I

```
RESULT 6
AAC42595
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SOX CCCCCCCCCCCCCXXX TTTTXXXXII
                                                                                                                                                                                                                                                                                                                                                                                                                                                   В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matches
                                25-FEB-1999
05-MAR-1999
09-MAR-1999
23-MAR-1999
23-MAR-1999
25-MAR-1999
01-APR-1999
01-APR-1999
08-APR-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             mHY2, the mature portion (lacking the predicted chloroplast transit peptide sequence) of the HY2 gene (see ABA91766) of Arabidopsis thaliana. The forward primer contains a 5' BglII site. The PCR product was subcloned into the Escherichia coll expression vector pGEX-6-Pl to give pGEX-mHY2. Recombinant HYB2 mature protein was produced as a glutathione-5-transferase fusion, and purified by affinity chromatography. The Arabidopsis HY2 gene encodes a ferredoxin-dependent biliverdin reductase, phytochromobilin synthase (see AAM50863), that is related to a family of proteins found in oxygenic photosynthetic bacteria. HY2 is an example of HY bilin reductases of the invention, which are useful e.g. for the conversion of biliverdin to phytobilin and the assembly of
                                                                                                                                                             25-FEB-2000;
                                                                                                                                                                                     06-SEP-2000
                                                                                                                                                                                                             EP1033405-A2
                                                                                                                                                                                                                                    Arabidopsis thaliana
                                                                                                                                                                                                                                                              metabolic
                                                                                                                                                                                                                                                                       Hybridisation assay; genetic mapping; gene expression protein identification; signal transduction pathway;
                                                                                                                                                                                                                                                                                                                                     17-OCT-2000
                                                                                                                                                                                                                                                                                                          Arabidopsis thaliana DNA fragment SEQ ID NO: 36142.
                                                                                                                                                                                                                                                                                                                                                             AAC42595
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Novel isolated HY2 family bilin reductase having bilin reductase activity, useful for converting biliverdin to phytobilin, and fo producing a photoactive holophytochrome and/or phytofluor -
                                                                                                                                                                                                                                                                                                                                                                                      AAC42595
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence 30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Example 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         holophytochromes or phytofluors.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Lagarias
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (REGC ) UNIV CALIFORNIA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                present sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     primer HY2SmaIrev
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      383 GTCTCTGCTGTGTCGTATAAGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 22;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Similarity
                                                                                                                                                                                                                                                                                                                                                                                    standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                GTCTCTGCTGTGTCGTATAAGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         JC,
                                                                                                                                                                                                                                                           pathway; promoter;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Page
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 BP;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                           2000EP-0301439
                                                                                                                                                                                                                                                                                                                                   (first entry)
       99US-0126264
99US-0126785
99US-0127462
99US-01278234
99US-0128714
99US-0129845
99US-0130077
                                                                                                          99US-0121825.
99US-0123180.
99US-0123548.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Kochi T,
                                                                                              99us-0125788
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 σ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      50; 102pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A,
                                                                                                                                                                                                                                                                                                                                                                                    DNA; 1232
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                5 C;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                is that of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   s that of primer mHY2Bg (see ABA91752) in the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Frankenberg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                G; 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Score 22;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                   ВP
                                                                                                                                                                                                                                                           termination
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       404
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ₽,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         z
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                mHY2BglIIfwd,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DB 24;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gambetta GA,
                                                                                                                                                                                                                                                           sequence; ss
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PCR amplification
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length 30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Montgomery
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   used
of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
```

0;

2 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	קי אקי אקי אקי אקי אקי
06-MAY 1999 06-MAY 1999 07-MAY 1999 11-MAY 1999 11-MAY 1999 11-MAY 1999 11-MAY 1999 11-MAY 1999 11-MAY 1999 12-MAY 1999 12-MAY 1999 13-MAY 1999 13-MAY 1999 13-MAY 1999 13-JUN 1999 13-JUN 1999 14-JUN 1999 16-JUN 1999 17-JUN 1999 18-JUN 1999 19-JUN 1999	3-APR 3-APR 3-APR 8-APR 0-APR 0-APR 4-MAY
9908-0132486 9908-0132486 9908-0132486 9908-0134256 9908-0134271 9908-0134271 9908-0134271 9908-0134271 9908-0135629 9908-0136392 9908-0137502 9908-0137502 9908-0139452 9908-0139453 9908-0139453 9908-0139453 9908-0139453 9908-0139453 9908-0139453 9908-0139453 9908-0139453 9908-0139453 9908-0139453 9908-0139453 9908-0139453 9908-0139453 9908-0139453 9908-0139453 9908-0139453 9908-0139453 9908-0140823 9908-0140823 9908-0140823 9908-0142803 9908-0142803 9908-0144085 9908-0144085 9908-0144085 9908-0144085 9908-0144085 9908-0144333	99US-0130510. 99US-0130891. 99US-0131449. 99US-0132048. 99US-0132407. 99US-0132484. 99US-0132485.
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	<b>P</b> R PR PR PR PR
	-JUL-1999 -JUL-1999 -JUL-1999 -JUL-1999 -JUL-1999
9908-0145195 9908-0145195 9908-0145218 9908-0145218 9908-0145218 9908-0145214 9908-0145214 9908-0145219 9908-0145219 9908-0145219 9908-0145219 9908-0147203 9908-0147203 9908-0147203 9908-0147303 9908-0147303 9908-0147303 9908-0148341 9908-0149368 9908-0149368 9908-0149368 9908-0149426 9908-0149426 9908-0151086 9908-0151086 9908-0151086 9908-0151303 9908-0151403 9908-0155439 9908-0155439 9908-0155439 9908-0155439 9908-0155439 9908-0155439 9908-0155439 9908-0155439 9908-0155439 9908-0155439 9908-0155439 9908-0155439 9908-0155439 9908-0155439 9908-0159236 9908-0159236 9908-0159239 9908-0159239	9US-01446: 9US-01448: 9US-01448: 9US-01450: 9US-01450: 9US-01450:

```
В
                                                                                                                                                                                                                                                                                                                                                               δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local S
Matches 21
    25-FBB-1999
05-MAR-1999
09-MAR-1999
23-MAR-1999
25-MAR-1999
25-MAR-1999
01-APR-1999
06-APR-1999
08-APR-1999
116-APR-1999
21-APR-1999
21-APR-1999
23-APR-1999
23-APR-1999
23-APR-1999
23-APR-1999
24-APR-1999
25-APR-1999
27-APR-1999
28-APR-1999
28-APR-1999
29-APR-1999
30-APR-1999
30-APR-1999
30-APR-1999
                                                                                                                                                                                                                           Hybridisation assay; genetic mapping; gene expression control; protein identification; signal transduction pathway; metabolic pathway; promoter; termination sequence; ss.
                                                                                                                                                                               06-SEP-2000
                                                                                                                                                                                              EP1033405-A2
                                                                                                                                                                                                            Arabidopsis thaliana
                                                                                                                                                                                                                                                                                                        AAC50780 standard; DNA; 1272 BP
                                                                                                                                                                25-FEB-2000;
                                                                                                                                                                                                                                                            Arabidopsis
                                                                                                                                                                                                                                                                            18-OCT-2000
                                                                                                                                                                                                                                                                                           AAC50780;
                                                                                                                                                                                                                                                                                                                                                                                                                                      4 - OCT - 1999;

8 - OCT - 1999;

1 - OCT - 1999;

1 - OCT - 1999;

1 - OCT - 1999;

1 - OCT - 1999;

2 - OCT - 1999;

2 - OCT - 1999;

5 - OCT - 1999;

5 - OCT - 1999;

6 - OCT - 1999;

6 - OCT - 1999;

8 - OCT - 1999;

8 - OCT - 1999;

8 - OCT - 1999;

8 - OCT - 1999;

9 - OCT - 1999;
                                                                                                                                                                                                                                                                                                                                               ch 1.0%;
| Similarity 100.0%;
| 21; Conservative
                                                                                                                                                                                                                                                          thaliana DNA fragment SEQ
                                                                                                                                                                2000EP-0301439
                                                                                                                                                                                                                                                                          (first entry)
   990S-0121825

990S-0123480

990S-0125788

990S-0126786

990S-0126785

990S-0126785

990S-0127462

990S-0128714

990S-0128714

990S-0128845

990S-0130449

990S-0130510

990S-0131449

990S-0132488

990S-0132488

990S-0132485
                                                                                                                                                                                                                                                                                                                                                                                                           990S-0160768
990S-0160814
990S-0160815
990S-0160815
990S-0160980
990S-0161980
990S-0161404
990S-0161405
990S-0161359
990S-0161359
990S-0161351
990S-0161920
990S-0161920
990S-0161920
990S-0161920
990S-0161921
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               99US-0159637.
99US-0159638.
99US-0159584.
99US-0160741.
99US-0160767.
                                                                                                                                                                                                                                                                                                                                                                              0
                                                                                                                                                                                                                                                                                                                                                                                      Score 21;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                              Mismatches
                                                                                                                                                                                                                                                           ij
                                                                                                                                                                                                                                                                                                                                                                                     DB 21;
. 7.9;
                                                                                                                                                                                                                                                           NO:
                                                                                                                                                                                                                                                           66110.
                                                                                                                                                                                                                                                                                                                                                                              0;
                                                                                                                                                                                                                                                                                                                                                                                            Length 1232;
                                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                              0;
                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                             0
  19-JUL-1999;
19-JUL-1999;
19-JUL-1999;
20-JUL-1999;
20-JUL-1999;
20-JUL-1999;
21-JUL-1999;
21-JUL-1999;
21-JUL-1999;
21-JUL-1999;
22-JUL-1999;
22-JUL-1999;
                                                                                                                            06-JUL-1999
08-JUL-1999
09-JUL-1999
12-JUL-1999
13-JUL-1999
14-JUL-1999
15-JUL-1999
                                                                                                                                                                                          01-JUL-1
                                                                                                                                                                                                                                                        18-JUN-1999;
18-JUN-1999;
21-JUN-1999;
22-JUN-1999;
                                                                                                                       16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   06-MAY-1999;
06-MAY-1999;
07-MAY-1999;
11-MAY-1999;
                                                                                                              16-JUL-1999;
                                                                                                                                                                                                                                         23-JUN-1999;
23-JUN-1999;
                                                                                                                                                                                                           30-JUN-1999
                                                                                                                                                                                                                                                                                                                                                                                          14-JUN
                                                                                                                                                                                                                                                                                                                                                                                                                08-JUN-1999
                                                                                                                                                                                                                                                                                       18-JUN-1999;
18-JUN-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                        28-MAY-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       21-MAY-1999,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    14-MAY-1999;
14-MAY-1999;
                                                                                                                                                                                                                                                                                                                             18-JUN-1999
                                                                                                                                                                                                                                                                                                                                                     18-JUN-1999
18-JUN-1999
                                                                                                                                                                                                                                                                                                                                                                     L7-JUN-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      14-MAY-1999
                                                                                       -JUL-1999
                                                                                                                                                                                           -JUL-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                -MAY-1
990S-0134218
990S-0134218
990S-0134218
990S-0134211
990S-0134218
990S-0134768
990S-0135124
990S-0135622
990S-0136021
990S-0136021
990S-0136021
990S-0136021
990S-0137528
990S-0137528
990S-0137528
990S-0137528
990S-0137528
990S-0137528
990S-0137528
990S-0139454
990S-0139454
990S-0139454
990S-0139453
990S-0139454
990S-0139453
990S-0139453
990S-0139453
990S-0139453
990S-0139453
990S-0139453
990S-0139453
990S-0139453
990S-0140853
990S-0144085
990S-0144085
990S-0144331
990S-0144331
990S-0144331
990S-0144333
990S-0144333
990S-0144333
990S-0144333
990S-0144333
990S-0144333
990S-0144333
990S-0144333
990S-0144333
990S-0144333
990S-0144333
990S-0144333
990S-0144333
990S-0144333
990S-0144333
990S-0144333
990S-0144333
990S-0144333
990S-0144333
990S-0144333
990S-0144333
990S-0144333
990S-0144333
990S-0144333
990S-0144333
990S-0144333
990S-0144333
990S-0144333
990S-0144333
990S-0144814
990S-0144808
990S-0144808
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          99US-0132486.
99US-0132487.
99US-0132863.
```

99US-0145089. 99US-0145192. 99US-0145145. 99US-0145218. 99US-0145224. 99US-0145276.

99US-0145913. 99US-0145918. 99US-0145919.

0

```
RESULT 8
ABA91744/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local S
Matches 21
The present sequence is that of a primer that was used, with the primer given in ABA91743, in the PCR amplification of the cleaved amplified polymorphic sequence (CAPS) marker cMZB10.18 of chromosome 3 of Arabidopsis thaliana. The primer pair includes a DdeI restriction endonuclease site. An hy2-1 mutant of ecotype Landsberg erecta was outcrossed with wild-type ecotype Columbia, and a mapping population was selected from F2 families with a long hypocotyl phenotype. PCR primer pairs (see ABA91735-48) for 7 CAPS markers were used in a map-based cloning of the HY2 gene. The HY2 locus was initially mapped to an interval of about 66 kb between the
                                                                                                                                                                                                                                                                           08-JUN-2000;
26-FEB-2001;
29-MAY-2001;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                21-OCT-1999
21-OCT-1999
22-OCT-1999
22-OCT-1999
25-OCT-1999
25-OCT-1999
25-OCT-1999
25-OCT-1999
26-OCT-1999
26-OCT-1999
28-OCT-1999
28-OCT-1999
28-OCT-1999
28-OCT-1999
29-OCT-1999
                                                                                                                                                                                                                                                                                                                                                                                                                     HY2; biliverdin reductase; phytochromobilin synthase; CAPS; cleaved amplified polymorphic sequence; marker; plant; enzypeck; primer; ss.
                                                                                                                                                      Novel isolated HY2 family bilin reductase having bilin reductase activity, useful for converting biliverdin to phytobilin, and for producing a photoactive holophytochrome and/or phytofluor .
                                                                                                                                                                                                        WPI;
                                                                                                                                                                                                                                                                                                                         05-JUN-2001; 2001WO-US18326
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ABA91744 standard;
                                                                                                                                 Example 1; Page 49; 102pp; English.
                                                                                                                                                                                                                               Lagarias
                                                                                                                                                                                                                                                                                                                                                                          WO200194548-A2.
                                                                                                                                                                                                                                                                                                                                                                                               Arabidopsis thaliana.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Arabidopsis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              07-MAY-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ABA91744;
                                                                                                                                                                                                                                                    (REGC ) UNIV CALIFORNIA.
                                                                                                                                                                                                                                                                                                                                                  13-DEC-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2002-195566/25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   21;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Similarity
                                                                                                                                                                                                                              JC,
                                                                                                                                                                                                                                                                           ; 2000US-210286P.
; 2001US-271758P.
; 2001US-0210286.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1.0%;
ilarity 100.0%;
Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      chromosome 3 CAPS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (first entry)
                                                                                                                                                                                                                              Kochi T,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                990S-0160814.
990S-0160815.
990S-0160981.
990S-0160981.
990S-0161404.
990S-0161405.
990S-0161406.
990S-0161360.
990S-0161361.
990S-0161361.
990S-0161361.
990S-0161992.
990S-0161992.
990S-0161992.
990S-0161993.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DNA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            20
                                                                                                                                                                                                                              Frankenberg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ВP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 21; DB; Pred. No. 7.9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     marker cMZB10.18 (HY2) PCR primer.
                                                                                                                                                                                                                              'n
                                                                                                                                                                                                                              Gambetta GA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DВ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                .9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           21;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0
                                                                                                                                                                                                                                                                                                                                                                                                                                   plant; enzyme;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 1272;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                              Montgomery BL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                               L
```

22-JUL-1999
23-JUL-1999
23-JUL-1999
23-JUL-1999
23-JUL-1999
26-JUL-1999
27-JUL-1999
27-JUL-1999
28-JUL-1999
29-AUG-1999
20-AUG-1999
20-AUG-1999
20-AUG-1999
20-AUG-1999
20-AUG-1999
20-AUG-1999
20-AUG-1999
20-AUG-1999
21-AUG-1999
21-AUG

990S-0145951 990S-0146388 990S-0146388 990S-0147303 990S-0147303 990S-0147303 990S-0147416 990S-0147416 990S-0147416 990S-0147416 990S-0147417 990S-0148171 990S-0148171 990S-0148171 990S-0148171 990S-0148171 990S-0148171 990S-0149723 990S-0149723 990S-0149723 990S-0149723 990S-0151066

δÃ

밁 Qy

Best Local Similarity Matches 20; Conserv

Conservative

0

Mismatches

0;

Indels

0;

Gaps

0;

100.0%;

Pred. No.

27;

```
RESULT 9
ABA91749
   88888888888
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Best
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
                                                                                                                                                                                                                                                                                                                                                                                                              08-JUN-2000;
26-FEB-2001;
29-MAY-2001;
                       The present sequence is that of a primer that was used, with the primer given in ABA91750, in the PCR amplification of the HY2 locus on chromosome 3 of Arabidopsis thaliana. The primers amplified a 1.98 kb fragment of the bacterial artificial chromosome MZB10.18 region of the chromosome from hy2 mutants of Arabidopsis and from the corresponding wild-type plants. The PCR products were then sequenced. The HY2 gene (see ABA91766) encodes a ferredoxin-dependent biliverdin reductase, phytochromobilin synthase (see ABM50863), that is related to a family of proteins found in oxygenic photosynthetic bacteria. HY2 is an example of HY bilin reductases of the invention, which are useful e.g. for the conversion of biliverdin to phytobilin and the assembly of holophytochromes or phytofluors.
                                                                                                                                                                                                                                                                        Novel isol activity,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         markers cMZB10 and cF3L24. Fine mapping localised the HY2 gene (see ABA91766) to 2 overlapping bacterial artificial chromosome clones, MZB10.18 and F3L24.1. The HY2 gene encodes a ferredoxin-dependent biliverdin reductase, phytochromobilin synthase (see AAM50863), that is related to a family of proteins found in oxygenic photosynthetic bacteria. HY2 is an example of HY bilin reductases of the invention, which are useful e.g. for the conversion of biliverdin to phytobilin and the assembly of holophytochromes or phytofluors.
                                                                                                                                                                                                                                                                                                                       WPI;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       WO200194548-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            HY2;
Sequence
                                                                                                                                                                                                                               Example
                                                                                                                                                                                                                                                           producing
                                                                                                                                                                                                                                                                                                                                                                                   (REGC:) UNIV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          05-JUN-2001; 2001WO-US18326
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         13-DEC-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Arabidopsis thaliana
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Arabidopsis HY2.locus PCR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        07-MAY-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ABA91749;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ABA91749 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence
                                                                                                                                                                                                                                                                                                                                                    Lagarias JC,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1205 ATTTGCAGACTTTCCCATGG 1224
                                                                                                                                                                                                                                                                                                                       2002-195566/25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             biliverdin reductase; phytochromobilin synthase;
me; PCR; primer; ss.
                                                                                                                                                                                                                                                        isolated HY2 family bilin reductase having bilin reductase ity, useful for converting biliverdin to phytobilin, and for cing a photoactive holophytochrome and/or phytofluor -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        20;
                                                                                                                                                                                                                               1:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Similarity
   20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ATTTGCAGACTTTCCCATGG 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 20 BP; 7 A; 4 C; 5 G; 4 T; 0 other;
                                                                                                                                                                                                                            Page 49; 102pp; English.
   B₽;
                                                                                                                                                                                                                                                                                                                                                                                                              2000US-210286P.
2001US-271758P.
2001US-0210286.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                   CALIFORNIA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (first entry)
                                                                                                                                                                                                                                                                                                                                                    Kochi T,
   4
A; 5 C; 4 G; 7 T; 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DNA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0.9%;
                                                                                                                                                                                                                                                                                                                                                  Frankenberg N,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          primer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 20;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Mismatches
other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DВ
27;
                                                                                                                                                                                                                                                                                                                                                    Gambetta GA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   24;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                                                                                                                                                                                                                  Montgomery BL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0
                                                                                                                                                                                                                                                                          for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0;
```

Query Match

Score 20;

DB

24;

Length

20;

AAC25855 ID AAC2 XX

AAC25855

standard;

cDNA;

299

ВP

RESULT 11

밁 Ş

20

TCTGCATTTCAAGATGATTG

2024 TCTGCATTTCAAGATGATTG 2043

Query Match Best Local : Matches

20;

Conservative

0;

Mismatches

0

Indels

0

Gaps

0

Similarity

0.9%;

Score 20; Pred. No

ŏ

DB 27;

Length 20;

```
RESULT 10
ABA91750/c
                                                                                                     primer given in ABA91749, in the PCK displayment of Arabidopsis thaliana. The primers amplified a on chromosome 3 of Arabidopsis thaliana. The primers amplified a 1.98 kb fragment of the bacterial artificial chromosome WZB10.18 region of the chromosome from hy2 mutants of Arabidopsis and from the corresponding wild-type plants. The PCR products were then
                                                                                                                                                                                                                                                                                                                                                                                08-JUN-2000;
26-FEB-2001;
29-MAY-2001;
                                      the corresponding wild-type plants. The PCR products were then sequenced. The HY2 gene (see ABA91766) encodes a ferredoxin-dependent biliverdin reductase, phytochromobilin synthese AAM50863), that is related to a family of proteins found in oxygenic photosynthetic bacteria. HY2 is an example of HY bilin reductases of the invention, which are useful e.g. for the conversion of biliverdin
                                                                                                                                                                                                                                                       Novel isolated HY2 family bilin reductase having bilin recactivity, useful for converting biliverdin to phytobilin,
Sequence
                           to phytobilin and the assembly of holophytochromes or phytofluors
                                                                                                                                                                                                              Example 1; Page 49; 102pp; English.
                                                                                                                                                                                                                                          producing a photoactive holophytochrome and/or phytofluor
                                                                                                                                                                                                                                                                                                 WPI; 2002-195566/25.
                                                                                                                                                                                                                                                                                                                            Lagarias
                                                                                                                                                                                                                                                                                                                                                                                                                                         05-JUN-2001;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     13-DEC-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               WO200194548-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Arabidopsis thaliana
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      enzyme;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   HY2; biliverdin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Arabidopsis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            07-MAY-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ABA91750;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ABA91750
                                                                                                                                                                                                                                                                                                                                                     (REGC ) UNIV CALIFORNIA
                                                                                                                                                                                     present
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1 CGTTTGTCTCACTGAAACTG 20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PCR;
                                                                                                                                                                                                                                                                                                                            JC,
20 BP; 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CGTTTGTCTCACTGAAACTG 125
                                                                                                                                                                                    sequence
                                                                                                                                                                                                                                                                                                                                                                                2000US-210286P.
2001US-271758P.
2001US-0210286.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             HY2 locus PCR primer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      primer;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                         2001WO-US18326
                                                                                                                                                                                                                                                                                                                           Kochi T,
                                                                                                                                                                  uence is that of a primer that was used, wi ABA91749, in the PCR amplification of the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   reductase;
A; 4 C; 3 G; 5 T; 0 other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DNA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    20
                                                                                                                                                                                                                                                                                                                           Frankenberg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   phytochromobilin
                                                                                                                                                                                                                                                                                                                           Ņ
                                                                                                                                                                                                                                                                                                                              Gambetta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   synthase;
                                                                                                                                                                                                                                                                                                                            GA,
                                                                                                                                                                                                                                                                                                                           Montgomery
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   plant;
                                                                                                                                                                                                                                                       reductase in, and for
                                                                                                                              from
                                                                                                                                                        ø
```

AAC25855;

```
ARSULT 12
AAS4657
ID AAS46
AC AAS46
AC AAS46
AC AAS46
XX 18-DE
T 18-DE
XX Tumou
XX Human
KW Cance
KW Cytos
XX Homo
                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                             Ş
                                                                                                                                                                                                                                                                                                          Query Match
Best Local Similarity
Matches 20; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                 The present sequence is one of a large number of 5' ESTs derived from mRNAs encoding secreted proteins. No ORF has yet been conclusively identified within the present sequence. The 5' ESTs were prepared from total human RNAs or polyA+ RNAs derived from 30 different tissues. ESTs sequences usually correspond mainly to the 3' untranslated region (UTR) of the mRNA because they are often obtained from oligo-dT primed cDNA libraries. Such ESTs are not well suited for isolating cDNA sequences derived from the 5' ends of mRNAs and even in those cases where longer cDNA sequences have been obtained, the full 5' UTR is rarely included. 5' ESTs are derived from mRNAs with intact 5' ends and can therefore be used to obtain full length cDNAs and genomic DNAs. 5' ESTs are also used in diagnostic, forensic, gene therapy and chromosome mapping procedures. They are used to obtain upstream regulatory sequences and to design
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       New nucleic acid that is a 5' expressed sequence tag (5' EST) obtaining cDNAs and genomic DNAs that correspond to 5'ESTs and diagnostic, forensic, gene therapy and chromosome mapping pro-
                                                                                                Tumour
                                                                                                                           18-DEC-2001
                                                                                                                                                      AAS46657;
                                                                                                                                                                                AAS46657 standard; DNA;
                                                                                                                                                                                                                                                                                                                                                                 Sequence
                                                                                                                                                                                                                                                                                                                                                                                           expression and secretion vectors.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Claim 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Dumas Milne Edwards J,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          06-SEP-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EP1033401-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Homo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 06-OCT-2000
                                        cytosine methy,lation;
                                                        cancer; tumour;
                                                                  Human; tumour suppressor gene;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   26-FEB-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               21-FEB-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (GEST ) GENSET
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2000-500381/45
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          therapy;
                                                                                                                                                                                                                                                      187
                                                                                                                                                                                                                                                                                137
                                                                                              suppressor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        5' EST;
                                                                                                                                                                                                                                                    TCTCTTTTATAGATAAAGAA 206
                                                                                                                                                                                                                                                                                TCTCTTTTATAGATAAAGAA 156
                                                                                                                                                                                                                                                                                                                                                                 299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQ ID 29930; 71pp + CD-ROM;
                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                                              BP; 100 A; 46 C; 53 G;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2000EP-0200610
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (first entry)
                                                                                                                        (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           chromosome mapping; ss.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     99US-0122487
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        expressed sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  protein 5'
                                                    CpG dinucleotide; single-nucleotide polymorphism;
                                                                                              gene derived
                                                                                                                                                                                                                                                                                                                     0.9%;
                                         ds.
                                                                                                                                                                                  8420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Duclert A,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EST,
                                                                                                                                                                                                                                                                                                        0;
                                                                                                                                                                                                                                                                                                                     Score 20;
Pred. No.
                                                                                                                                                                                  ΒP
                                                                  oncogene; antitumour; cytostatic;
                                                                                              chemically modified sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQ
                                                                                                                                                                                                                                                                                                          Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       tag; secreted protein; cDNA isolation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Giordano
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ID NO:
                                                                                                                                                                                                                                                                                                                                                               99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 English
                                                                                                                                                                                                                                                                                                                                                               T; 1 other;
                                                                                                                                                                                                                                                                                                                     DB 21;
25;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    29930
                                                                                                                                                                                                                                                                                                        0;
                                                                                                                                                                                                                                                                                                                                    Length 299;
                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ts and for procedures
                                                                                                                                                                                                                                                                                                        0,
                                                                                                                                                                                                                                                                                                        Gaps
                                                       SNP;
                                                                                                                                                                                                                                                                                                        0
```

```
ABK31324
ID ABK
XX
AC ABK
AC ABK
AX
DT 23-
XX
DE Sig
XX
Hum
KW CpgG
KW ant
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               genes and analysing
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          numbers 408, 458 and 500 are missing from the sequence listing) sequences (Ss) and sequences complementary to (Ss). The nucleic acid may be a peptide nucleic acid-oligomer (PNA) of at least 9 nucleotides and may form part of a set of probes for detecting the cytosine methylation state and/or single nucleotide polymorphisms and also to be used in an array for analysing diseases associated with CpG dinucleotides e.g. cancers and tumours. The probes can also be used in a method for association to specific and/or therapy of existing diseases or also be used in a method for association to specific and/or therapy of existing diseases or the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem of the problem 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     bases, of a segment of chemically pretreated DNA (CP DNA) e.g. with bisulphite, of genes associated with tumour suppression and oncogenes having a sequence taken from 536 (actually 533 since numbers 408, 458 and 500 are mission from the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the st
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     WPI;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Olek
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence 8420 BP;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              of the printed specification, format directly from WIPO at
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            diseases, by analysing cytosine methylations. The parameters may be compared to another set of genetic and/or epigenetic parameters, the differences serving as basis for diagnosis and/or prognosis events which are disadvantageous to patients. The present sequence is one of the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Claim 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         01-SEP-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     07-APR-2000;
30-JUN-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        15-MAR-2000;
06-APR-2000;
                                                                                                                                                                                                        23-APR-2002
                                                                                                                                                                                                                                                                              ABK31324;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Note: The sequence data for this patent did not form part of the printed specification, but was obtained in electronic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Fragments
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              15-MAR-2001;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    20-SEP-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   WO200168912-A2
                                                                                                                                                                                                                                                                                                                                          ABK31324 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ftp.wipo.int/pub/published_pct_sequences
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               533 genomic sequences derived from tumour suppressor genes and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (EPIG-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  492 AGTGTAGTGGGAGGATTATA 511
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2001-602752/68
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               57
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EPIGENOMICS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Piepenbrock
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AGTGTAGTGGGAGGATTATA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            of chemically modified genes associated with tumour suppressor oncogenes, useful in designing primers and probes for diseases associated with cytosine methylation state e.g.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2000DE-1019173.
2000DE-1032529.
2000DE-1043826.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ħ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2000DE-1013847
2000DE-1019058
                                                                                                                                                                                                    (first
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2001WO-EP02955
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             No 379;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1610 A; 245 C;
                                                                                                                                                                                                                                                                                                                                          DNA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0.9%; or
100.0%; Pr
                                                                                                                                                                                                    entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ņ
                                                                                                                                                                                                                                                                                                                                          8420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      27pp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 20;
                                                                                                                                                                                                                                                                                                                                          ВP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               76
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Pred.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       <u>.</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2452 G; 4113
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ŏ.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DB
23;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   22;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ŧ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 8420;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0 other
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0
```

Human; signal transduction associated gene; cytosine methylation state; CpG island; signal transduction associated disease; solid tumour; cance antitumour; cytostatic; mutant; ds.

associated gene modified DNA #84

Signal transduction

```
RESULT 14
ABN79456/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                 δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CC The present invention relates to chemically modified DNA sequences of CC signal transduction associated genes. The DNA sequences are chemically CC modified using a solution of bisulphite, hydrogen sulphite or CC disulphite. Also disclosed are oligonuclectides and/or PNA oligomers CC for detecting the cytosine methylation state (CpG islands) of these CC genes, and a method for the diagnosis and/or therapy of genetic and CC epigenetic parameters of genes associated with signal transduction. CC The genomic DNA can be obtained from cells or cellular components which CC contain DNA, e.g. cell lines, biopsies, blood, sputum, stool, urine, CC contain DNA, e.g. cell lines, biopsies, blood, sputum, stool, urine, CC crebral-spinal fluid, tissue embedded in parafifin such as tissue from CC cys, intestine, kidney, brain, heart, prostate, lung, breast or liver, intestine, kidney, brain, heart, prostate, lung, breast or liver, CC sequences of the invention are useful for the diagnosis and therapy of CC cancer. ABK31189-ABK31545 represent chemically pretreated genomic DNA CC sequences of different genes associated with signal transduction e.g. solid tumours and CC sequences of different genes associated with signal transduction is considered.
                                                                                                                                                                                                                                                                                                                                                                                     Matches
                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
Best Local
Human; ORF; open reading frame; ORFX; drug screening; diagnosis; disease monitoring; cytokine; cell proliferation; cell differentiation; immune modulation; haematopoiesis regulation; tissue growth; angiogenesis; activin; inhibin; chemotactic; chemokinetic; haemostatic; thrombolytic; tumour inhibition; bodily characteristic; fertility; behaviour; cancer; proliferative disorder; neurological disorder;
                                                                                                                            Human
                                                                                                                                                            08-JUL-2002
                                                                                                                                                                                                ABN79456;
                                                                                                                                                                                                                         ABN79456 standard; cDNA; 399
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Note: The sequence data for this patent did no specification, but was obtained in electronic European Patent Office.
                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              their complementary sequences
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         sequences of different genes associated with signal transduction,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Oligonucleotide for diagnosis and therapy of diseases associated with signal transduction e.g. cancer, comprises chemically modified genomic sequences of genes associated with signal transduction
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Claim
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              30-JUN-2000;
01-SEP-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              29-JUN-2001;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                03-JAN-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (EPIG-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                W0200200926-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Homo sapiens.
Synthetic.
                                                                                                                                                                                                                                                                                                                                492 AGTGTAGTGGGAGGATTATA: 511
                                                                                                                            ORF4403
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2002-147896/19
                                                                                                                                                                                                                                                                                                                 57
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1.
                                                                                                                                                                                                                                                                                                                                                                                     20;
                                                                                                                                                                                                                                                                                                                                                                                                 Similarity
                                                                                                                                                                                                                                                                                                              AGTGTAGTGGGAGGATTATA 76
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EPIGENOMICS
                                                                                                                                                                                                                                                                                                                                                                                                                                                  8420 BP;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQ ID No 167;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Piepenbrock C,
                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                          (first entry)
                                                                                                                        CDNA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2000DE-1032529
2000DE-1043826
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2001WO-EP07472
                                                                                                                                                                                                                                                                                                                                                                                                                                            1610 A; 245 C; 2452 G; 4113 T; 0 other;
                                                                                                                       SEQ ID NO:8805.
                                                                                                                                                                                                                                                                                                                                                                         100.08;
                                                                                                                                                                                                                                                                                                                                                                                                                  0.9%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    24pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Berlin
                                                                                                                                                                                                                                                                                                                                                                                              Score 20; pred. No.
                                                                                                                                                                                                                          ВP
                                                                                                                                                                                                                                                                                                                                                                              Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           7.
                                                                                                                                                                                                                                                                                                                                                                                                No.
                                                                                                                                                                                                                                                                                                                                                                                              DB
23;
                                                                                                                                                                                                                                                                                                                                                                                                            24;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          not form part of the ic format directly fro
                                                                                                                                                                                                                                                                                                                                                                            0
                                                                                                                                                                                                                                                                                                                                                                                                          Length 8420;
                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                          0;
                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  genomic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Or
                                                                                                                                                                                                                                                                                                                                                                       0;
```

```
Sequences ABP31028-ABP35561 represent 4534 novel human proteins designated ORF (open reading frame) 1-4534, and sequences ABN75054-ABN75587 represent cDNAs encoding them. The invention also encompasses polypeptides at least 80% identical to the ORF1-ORF4534 (collectively referred to as ORFX) proteins, polynucleotides at least 85% identical to the ORFX nucleic acid sequences, vectors and host cells comprising ORFX polynucleotides, the recombinant production of ORFX proteins, antibodies specific for ORFX proteins, methods of detecting ORFX proteins, antibodies specific for ORFX proteins, methods of detecting ORFX proteins and polypeptides, methods of screening for modulators of ORFX expression or activity, and methods of screening individuals for a predisposition to an ORFX-associated disorder. The ORFX proteins of the invention have a wide cell differentiation, immune modulation, haematopoiesis regulation, constitutes, which is a stilled to be a second of the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear and the collinear a
                                                                                                                                                                                                                                                                                                                                                                        cell differentiation, immune modulation, haematopolesis regulation, tissue growth, angiogenesis, activin or inhibin activity, chemotactic/ chemokinetic activity, haemostatic activity. thrombolytic activity, receptor/ligand, antiinflammatory activity, tumour inhibition activity, and antiinfective activity, and may also be involved in the determination of bodily characteristics, fertility and behaviour. ORFX proteins, neurological disorders such as psoriasis and benign tumours, neurological disorders such as epilepsy and Alzheimer's disease,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Claim 1; Page 2444;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Novel human polypeptides and polynucleotides useful for diagnosing, preventing and treating cardiovascular disease, neurodegenerative, hyperproliferative disorders and disorders related to organ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                WPI; 2002-106200/14.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      vasotropic; antipsoriatic; antidiabetic; cytostatic; nootropic; neuroprotective; antiatherosclerotic; anticoaquiant; thrombolytic; cardiant; hypotensive; antithyroid; antiinflammatory; immunomodulator; dermatological; analgesic; virucide; antibacterial; fungicide; gene; s
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       P-PSDB; ABP35430
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         24-MAY-2001; 2001WO-US17076
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 WO200190366-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Homo sapiens.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        transplantation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Leach MD,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          24-MAY-2000; 2000US-206690P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               hypothyroidism; cholesterol ester storage disease;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     cardiovascular disease; immune system disorder; tissue regeneration
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (CURA-) CURAGEN CORP
                                         to generate specific antibodies, which are useful in the treatment and monitoring of ORFX-associated diseases.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Shimkets
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2508pp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ₽.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  disorder; organ transplantation;
ration disorder; diabetes mellitus;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  infection;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            vulnerary;
                                                                                                                                                                                                                                                                                                      ester
```

399 В₽; 115 A; 87 G 72 G; 124 T; 1 other

Query Match Best Local Sir Matches 19; Similarity Conservative 100.08; 1 Score 19; Pred. No Mismatches DB 24; 0; Length Indels 0, Gaps

0,

Š

```
RESULT 15
ABN60565;
XX
AC ABN60565 standard; cDNA; 470 BP.
XX
AC ABN60565;
XX
AC ABN60565;
XX
AC ABN60565;
XX
AC ABN60565;
XX
AC ABN60565;
XX
DE Human cancer related polynucleotide
XX
Human; cytostatic; gene expression
XX
Human; cytostatic; gene expression
XX
W Human; cytostatic; gene expression
XX
W Human; cytostatic; gene expression
XX
W Human; cytostatic; gene expression
XX
Human; cytostatic; gene expression
XX
W Human; cytostatic
XX
Human; cytostatic
XX
Human; cytostatic
XX
Human; cytostatic
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2002-241905/29.
XX
RPI; 2
                                                                                                                                                                                                        Ş
                                                                                                                                          밁
Search completed: June 24, 2003, 15:40:51 Job time : 338 secs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                       Query Match
Best Local Similarity
Matches 19; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       The invention relates to an isolated polynucleotide (ABN27253-ABN33262) with cytostatic activity. The polynucleotide is used to produce a polypeptide, to detect differentially expressed genes correlated with a cancerous state of a mammalian cell and to inhibit tumour growth. The polynucleotide is used as a probe in mapping and tissue profiling. The encoded polypeptide and antibodies to the polypeptide can also be used for therapeutic and diagnostic purposes. The polynucleotide is useful for
                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 470 BP; 149 A; 84 C; 92 G; 145 T; 0 other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        gene therapy.

Note: The sequence data for this patent did not form part of the printed specification, but was obtained in electronic format directly from WIPO at ftp.wipo.int/pub/published_pct_sequences.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Claim 1; SEQ ID NO 532; 883pp + Sequence Listing; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  New nucleic acid for producing a polypeptide, detecting differentially expressed genes correlated with a cancerous state of a mammalian cell, and inhibiting tumor growth -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Human; cytostatic; gene expression; gene mapping; tissue profiling; gene therapy; cancer; tumour; gene; ss.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Escobedo J, Garcia PD, Sudduth-Klinger J, Reinhard C, R Lamson G, Scott EM, Zhang G, Kassam A, Pot D, Labat I;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Human cancer related polynucleotide SEQ ID NO 532
                                                                                                                               0.9%; Score 19; DB nilarity 100.0%; Pred. No. 77, Conservative 0; Mismatches
                                                                                                                                                                                                                                                                                                               DB 24; Length 470; 77;
                                                                                                                                                                                                                                                                              0
                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Randazzo
                                                                                                                                                                                                                                                                          0;
                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ŧ
                                                                                                                                                                                                                                                                          0
```

*				-30 (-10)	
·					
	*				
	•				-5
<i>1**</i>				· ·	
•					
γ.,					
**		*			
			-0		•
*					
	W				
·		8	4		
					. ·
, 1	¥.				
		(O <sub>2</sub> )			
	· · · · · · · · · · · · · · · · · · ·				
					Ů
		<b>L</b> .	*		
			4 41		
					*
*****					
					. 3.
1					
			1.1		
•					
	X. P.				* 4
<b>∳</b>					
<b>♦</b>				* * * *	
	* 4				
			*		
,			. •		
	. v.				
	5 A				
		•		*	
	7	.*			
				•	
	. "				•
	•				
		v	- 50		
	,				
		7			
ī.					
	*		~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~		20
	47704		- <u>-</u> -	· · · · · · · · · · · · · · · · · · ·	

Run

```
Result
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Minimum DB
Maximum DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Database :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Post-processing: Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                OM nucleic - nucleic search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Total number of hits satisfying
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Word size :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Searched:
                                                                                                                                                                                                                                                                                                                                                                 ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         on :
     Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       seq length: 0 seq length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      OLIGO_NUC Gapop 60.0 ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-09-870-406A-32
2160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               441362 seqs, 153338381 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             June 24, 2003, 15:31:10 ; Search time 80 Seconds (without alignments) 8280.273 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                            Query
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Issued_Patents_NA:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           gaattccccacgtcaacgtg.....tcgtctctacctaatcaaca
     GenCore version 5.1.6
Copyright (c) 1993 - 2003 Compugen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /cgn2_6/ptodata/1/ina/5A_COMB.seq:*
/cgn2_6/ptodata/1/ina/5B_COMB.seq:*
/cgn2_6/ptodata/1/ina/6A_COMB.seq:*
/cgn2_6/ptodata/1/ina/6B_COMB.seq:*
/cgn2_6/ptodata/1/ina/BCTUS_COMB.seq:*
/cgn2_6/ptodata/1/ina/Backfiles1.seq:*
                                                                                                                                                                                                                                                                                                                                                               Length
                                       BB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gapext 60.0
              31141123152344434311124
PCT-US95-0251-15
US-08-558-935-1
US-08-558-935-3
US-08-624-581-3
US-08-624-581-3
US-08-624-634-3
US-08-640A-22
US-08-640A-222
US-08-480-640A-222
US-08-488-237A-222
US-08-88-237A-222
US-08-8811-177A-3
US-08-8811-177A-3
US-08-811-177A-1
US-08-811-177A-1
US-08-811-177A-1
US-08-813-659A-28
US-08-811-177A-1
US-08-813-659A-28
US-08-813-659A-28
US-08-813-659A-28
US-08-813-659A-28
US-08-83-659A-28
US-08-840-031-91
US-08-866-968C-1
US-08-840-031-101
US-08-840-031-101
US-08-840-031-101
US-08-840-938-1
US-08-940-031-101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             chosen
                                                                                                                                                                                                                                                                                                                                                                                                   SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              882724
       Sequence 15, Appl
Sequence 1, Appli
Sequence 3, Appli
Sequence 3, Appli
Sequence 3, Appli
Sequence 3, Appli
Sequence 5, Appli
Sequence 5, Appli
Sequence 222, App
Sequence 222, App
Sequence 222, App
Sequence 221, Appli
Sequence 516, Appli
Sequence 516, Appli
Sequence 6, Appli
Sequence 6, Appli
Sequence 1, Appli
Sequence 1, Appli
Sequence 1, Appli
Sequence 101, Appli
Sequence 1, Appli
                                                                                                                                                                                                                                                                                                                                                             Description
Sequence
Sequence
Query Match
Best Local Similarity
```

000

0.9%;

Score 19; Pred. No.

9. BB .1;

Length 731;

O

ဂ ဂ

Sequence 6, Appli Sequence 9, Appli Sequence 67, Appl Sequence 67, Appl Sequence 3, Appli Sequence 60, Appl Sequence 5, Appli Sequence 5, Appli Sequence 3, Appli Sequence 199, Appl Sequence 197, Appl Sequence 711, Appl Sequence 110, Appl Sequence 110, Appl Sequence 110, Appl	8 24701 2 US-08-53-659A-60 8 24701 2 US-08-853-659A-60 8 398 1 US-08-417-460-3 8 422 1 US-08-417-460-3 8 531 4 US-09-144-001C-1897 8 626 4 US-09-328-111-719 8 981 2 US-08-951-527-331 8 626 4 US-09-328-111-719 8 981 2 US-08-757-653-171 8 981 2 US-08-759-381-110 8 981 3 US-08-759-314-110 8 981 3 US-08-758-314-110 8 981 3 US-08-758-314-110 8 0981 3 US-08-759-314-110 8 0981 3 US-08-759-314-110 8 0981 3 US-08-759-314-110 8 108-08-759-088-110 8 0981 3 US-08-759-314-110 8 108-08-759-108-108-108-108-108-108-108-108-108-108	8 18 0.8 8967 2 US-08-853-6 9 18 0.8 8967 2 US-08-853-6 0 18 0.8 8967 2 US-08-853-6 11 18 0.8 8967 2 US-08-853-6 11 18 0.8 8967 2 US-08-853-6 2 18 0.8 24701 2 US-08-853-6 3 18 0.8 24701 2 US-08-853-6
---	--	---

밁 Ş

Plant

```
US-08-558-935-1
                                                                                                                                                                                                                                                           PCT-US95-02251-15
                                                                    Sequence 1, Appli
Patent No. 622863
                                                                                                                                                                                                         Matches
                                                                                                                                                                                                                                Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PCT-US95-02251-15
                                                        GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 15, Applicat GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                                                                                                                   SEQUENCE CHARACTERISTICS:
                     APPLICANT:
                                            APPLICANT:
                                   APPLICANT:
                                                                                                                                                                                                                                                                     MOLECULE TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                  TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                        ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                                                                                                      TELEPHONE: (516
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NUMBER OF SEQUENCES: 1
                                                                                                                                                                                                                                                                                   TOPOLOGY: linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TITLE OF INVENTION:
                                                                                                                                                                                                                    Local
                                                                                                                                                                                                                                                                                                                         LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                NAME: Parker, David L.
REGISTRATION NUMBER: 32.
REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICATION NUMBER FILING DATE: 30-S1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICATION NUMBER: FILING DATE: CONCU
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SOFTWARE: PatentIn Release #1.0, Version SOFTWARE: #1.30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS/ASCII
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 COUNTRY: U
ZIP: 77210
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ADDRESSEE:
                                                                                                                                                                        1216 TTCCCATGGGGAGGGAAAT 1234
                                                                                                                                                      170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1216 TTCCCATGGGGAGGGAAAT 1234
                                                                                                                                                                                                       1 Similarity
19; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  170 TTCCCATGGGGAGGGAAAT 188
                                                                                                                                               TTCCCATGGGGAGGGAAAT 188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           19;
                                                                                                                                                                                                                                                                                                     nucleic acid
                                                                                 Application US/08558935
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Houston
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Texas
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Application PC/TUS9502251
                              Kadotani,
                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           P.O. Box 4433
                                          Kasaoka, Keisuke
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        United States of America
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                          (512) 418-3000
13) 789-2679
                                                                                                                                                                                                                                                                  DNA (genomic)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 18-FEB-1994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CONCURRENTLY HEREWITH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       30-SEP-1994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Floppy disk
                                                                                                                                                                                                                                                                                             single
                                                                                                                                                                                             0.9%; pr
100.0%; pr
0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 METHODS AND COMPOSITIONS FOR STIMULATING BONE CELLS
                                                                                                                                                                                                                                                                                                                                                                                                    32,165
THER: UMICOO9P--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US 08/316,650
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PCT/US95/0225;
                                                                                                                                                                                                                                                                                                                                                 15:
                                                                                                                                                                                                              Score 19;
Pred. No
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0;
                                                                                                                                                                                                  Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Mismatches
                                                                                                                                                                                                              DB 5;
                                                                                                                                                                                                                        Length 731;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0;
                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Indels
                                                                                                                                                                                             0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0;
                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                            0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0;
                                                                                                                                                                                                                            RESULT 4
US-08-558-935-3
                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                           Š
                                                                                                                                                                                                                                                                                                                                                                                        US-08-558-935-1
                                                                                                                                                                                                   Sequence 3 Patent No.
                                                                                                                                                                                                                                                                                                                                   Matches
                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local
                                                                           INFORMATION FOR SEQ ID NO: SEQUENCE CHARACTERISTICS:
                                                                                                                                                            APPLICANT: APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                          MOLECULE TYPE:
HYPOTHETICAL: N
ANTI-SENSE: NO
                                                                CORRESPONDENCE ADDRESS:
                                                                                                                                     APPLICANT:
                                                                                                                                                  APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                               ORIGINAL SOURCE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                REFERENCE/DOCKET NUMBER: 76
REFERENCE/DOCKET NUMBER: 76
TELECOMMUNICATION INFORMATION:
TELEPHONE: (703) 205-8000
                STREET: BLIU GALGIN
CITY: Falls Church
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICATION NUMBER: US 08/139,157
FILLING DATE: 21-OCT-1993
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CLASSIFICATION: 800
PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION NUMBER: US/08/558,935
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICANT: Hayashi,
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               COMPUTER READABLE FORM:
                                                     ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TELLEFAX: 1/2
TELEFAX: 248345
                                                                                                                                                                                                                                                                                                                                 Local Similarity nes 19; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NUMBER OF SEQUENCES: 8
                                                                                                                                                                                                                                                                                                                                                                                                  ORGANISM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STRANDEDNESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NAME: Murphy Jr., Gerald M. REGISTRATION NUMBER: 28,977
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CITY: Falls Church
                                                                                                                                                                                                                                                                                          255 TATCAATGGAGTTTGGGTT 273
                                                                                                                                                                                                                                                                           381 TATCAATGGAGTTTGGGTT 399
                                                                                                                                                                                      INFORMATION:
Virginia
Y: U.S.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         nucleic acid
                                                                                                                                                                                                             Application US/08558935
                                 E: Birch, Stewart, Kolasch and Birch
8110 Gatehouse Road, Suite 500 East
                                                                                                                       Kadotani, Nacc
Kudotani, Shigeru
Kuwata, Shigeru
Tashi, Yumiko
                                                                                                                               Hayashi,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Virginia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     801 base pairs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (703) 205-8050
                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8110 Gatehouse
                                                                                                                                                                                                                                                                                                                                                                                               Potato Virus Y-T
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          U.S.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Hayashi,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 linear
                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                   DNA (genomic)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              double
                                                                                  Recombinant Vector, Method for Giving Immunity Against PVY-T to Potato Plant, Against PVY-T
                                                                                                                                                                                                                                                                                                                          0.9%; Score 19;
100.0%; Pred. No.
tive 0; Mismatc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Stewart, Kolasch and Birch
house Road, Suite 500 East
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Recombinant Vector, Method for Giving
Immunity Against PVY-T to Potato Plant,
Having Immunity Against PVY-T
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Yumiko
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               60-174P
                                                                                                                                                                                                                                                                                                                             Mismatches
                                                                                                                                                                                                                                                                                                                                         DB 4;
. 9.1;
                                                                                                                                                                                                                                                                                                                                                     Length 801
                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                  and
                                                                                                                                                                                                                                                                                                                          0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        and Potato
                                                                                               Potato Plant
```

0;

RESULT 3

밁 δĀ

```
밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-08-624-581-3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ; ANTI-SENSE:
US-08-558-935-3
                                                                                                                                         COUNTRY: USA
COUNTRY: USA
ZIP: CA94304-1104
COMPUTER READABLE FORM:
MEDLIM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
CURRENT APPLICATION NUMBER: US/08/624,581
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TELEX: 248345
INFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
LENGTH: 895 bass --
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence 3, Application US/08624581 Patent No. 5907084
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
                                                           FILING DATE:
CLASSIFICATION: 435
CLASSIFICATION: 435
ATTORNEY/AGENT INFORMATION:
NAME: MAICUS-Wyner, Lynn
REGISTRATION NUMBER: 34,86
REFERENCE/DOCKET NUMBER: 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                       GENERAL INFORMATION:
               NFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        tent No.
            TELECOMMUNICATION INFORMATION:
TELEPHONE: 415-354-3588
NFORMATION FOR SEQ ID NO: 3:
                                                                                                                                                                                                                                                                                                                                                                    NUMBER OF SEQUENCES: 5
CORRESPONDENCE ADDRESS:
ADDRESSEE: SANDOZ AGRO.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 REFERENCE/DOCKET NUMBER: 76
TELECOMMUNICATION INFORMATION:
TELEPHONE: (703) 205-8000
TELEPAX: (703) 205-8050
                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT: de Haan, Peter T
TITLE OF INVENTION: Virus resistant or tolerant cells
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               HYPOTHETICAL:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MOLECULE TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/139,157
FILING DATE: 21-OCT-1993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SOFTWARE: PatentIn Relaction DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 COMPUTER READABLE FORM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ATTORNEY/AGENT INFORMATION:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Local Similarity
mes 19; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TYPE: nucleic acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                      STREET:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CLASSIFICATION: 800
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MEDIUM TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STRANDEDNESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NAME: Murphy Jr., G. REGISTRATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              255 TATCAATGGAGTTTGGGTT 273
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             466 TATCAATGGAGTTTGGGTT 484
                                                                                                                                                                                                                                                                                                                                      Palo Alto
                                                                                                                                                                                                                                                                                                                    California
                                                                                                                                                                                                                                                                                                                                                    975 California Avenue
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PatentIn Release #1.0, Version #1.25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DNA (genomic)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  double
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gerald M.
SR: 28,977
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0.98;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US/08/558,935
                                                                           34,869
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        760-174P
                                                             137-1088/SG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score 19;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DB 4;
9.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 895;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0;
```

```
밁
                         γ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ; ORIGINAL SOURCE:
; ORGANISM: Chimeric sequence
US-08-624-581-3
                                                                                                               US-08-571-758-3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT 6
US-08-571-758-3/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence 3 Patent No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local Similarity
Matches 19; Conserv
                                                          Matches
                                                                    Query Match
Best Local Similarity
                                                                                                                                                                                                             TELEPHONE: (415) 343-4
TELEFAX: (415) 343-43-
INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GENERAL INFORMATION:
                                                                                                                                                                                                                                        REGISTRATION NUMBER: 36,627
REFERENCE/DOCKET NUMBER: B9
TELECOMMUNICATION INFORMATION:
TELEPHONE: (415) 343-4341
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICANT:
APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                              COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TUPULUE N
HYPOTHETICAL: N
                                                                                                                                                                                                                                                                                                 CLASSIFICATION: 435
ATTORNEY/AGENT INFORMATION:
NAME: OSMAN, RICHARD A
                                                                                                                                                                                                                                                                                                                                                        CURRENT APPLICATION DATA: APPLICATION NUMBER: US
                                                                                                                             TOPOLOGY: 11 MOLECULE TYPE:
                                                                                                                                                                                                  SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT: Wassarman, David A.
TITLE OF INVENTION: A No. 5700675el Protein Kinase Required for TITLE OF INVENTION: Signal Transduction
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NUMBER OF SEQUENCES:
                                                                                                                                                      LENGTH: 3681 base pairs
TYPE: nucleic acid
STRANDEDNESS: double
                                                                                                                                                                                                                                                                                                                                                                                      SOFTWARE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CITY: SAN FRANCISCO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TYPE: nucleic acid
STRANDEDNESS: double
                                                                                                                                                                                                                                                                                                                                            FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2370 TATCAATGGAGTTTGGGTT 2388
197 CAGCAGTACAAACTGATTG 179
                          779 CAGCAGTACAAACTGATTG 797
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            255 TATCAATGGAGTTTGGGTT 273
                                                                                                                                                                                                                                                                                                                                                                                                                                                              94104
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              , Application US/08571758 5700675
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CALIFORNIA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     268 BUSH STREET, SUITE 3200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Rubin,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2917 base pairs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Therrien, Marc
                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                      PatentIn Release #1.0, Version #1.30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Chang, Henry C.
Karim, Felix D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      unknown
                                                                                                                                            linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ĕ
                                                                                                                           DNA (genomic)
                                                                                                                                                                                                                           343-4342
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gerry M
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       100.0%; F
                                                                   0.9%; Score 19;
100.0%; Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0.98;
                                                                                                                                                                                                                                                                                                                                                          us/08/571,758
                                                                                                                                                                                                                ω.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ; Score 19; DB
%; Pred. No. 8.8
0; Mismatches
                                                       0;
                                                                                                                                                                                                                                                                        в96-010
                                                        Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8.8;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DB 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0;
                                                                                Length 3681;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 2917;
                                                       Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                       0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0;
                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                       0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0,
```

US-08-909-984A-3/c

```
us-08-909-983-3/c
                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                       Matches
                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Patent No.
                                                                                                                                                                                                                    quence 3, Application US/08909983 tent No. 5747288
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TELEFAX: (415) 343-43
NFORMATION FOR SEQ ID NO:
                                               CORRESPONDENCE ADDRESS
                                                         APPLICANT: Wassarman, David A.
TITLE OF INVENTION: A No. 5747288el Protein Kinase Required for Ras
TITLE OF INVENTION: Signal Transduction
NUMBER OF SEQUENCES: 12
                                                                                                                                                                                                   NERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE CHARACTERISTICS:
LENGTH: 3681 base pair
                                                                                                                                  PPLICANT:
                                                                                                                                                                    APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MOLECULE TYPE:
                                                                                                                                                    PPLICANT:
                                                                                                                                                                                PPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ATTORNEY AGENT INFORMATION:
NAME: OSMAN, RICHARD A
REGISTRATION NUMBER: 36,627
REFERENCE/DOCKET NUMBER: B9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               COMPUTER READABLE FORM: MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CORRESPONDENCE ADDRESS:
ADDRESSEE: SCIENCE & TECHNOLOGY LAW GROUP
STREET: 268 BUSH STREET, SUITE 3200
CITY: SAN FRANCISCO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TELEPHONE: (415) 343-4341
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT: Wassarman, David A.
TITLE OF INVENTION: A No. 5747275el Pro-
TITLE OF INVENTION: Signal Transduction
NUMBER OF SEQUENCES: 12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT:
                 STREET:
                                                                                                                                                                                                                                                                                                                                                                                                   Local
                                 DDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                STRANDEDNESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      COUNTRY: U
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                               197 CAGCAGTACAAACTGATTG 179
                                                                                                                                                                                                                                                                                                                                               779 CAGCAGTACAAACTGATTG 797
                                                                                                                                                                                                                                                                                                                                                                                     l Similarity
19; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            H: 3681 base pairs nucleic acid DEDNESS: double
SEE: SCIENCE & TECHNOLOGY LAW: 268 BUSH STREET, SUITE 3200
SAN FRANCISCO
                                                                                                                             Therrien, Marc
Chang, Henry C.
Karim, Felix D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CALIFORNIA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Rubin, Gerry M.
Therrien, Marc
Chang, Henry C.
Karim, Felix D.
                                                                                                                                                                                  Rubin, Gerry M.
                                                                                                                                                                                                                                                                                                                                                                                   Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            IBM PC compatible
SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             lication US/08909984A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                DNA (genomic)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  343-4342
                                                                                                                                                                                                                                                                                                                                                                                                0.9%; Score 19;
100.0%; Pred. No
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US/08/909,984A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     5747275el Protein Kinase Required for Ras
                                                                                                                                                                                                                                                                                                                                                                                  0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               в96-010
                                                                                                                                                                                                                                                                                                                                                                                Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                 No.
                                                                                                                                                                                                                                                                                                                                                                                                8.8;
                                                                                                                                                                                                                                                                                                                                                                                                            DB 1;
                                                                                                                                                                                                                                                                                                                                                                                                            Length 3681;
                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                            0;
                                                                                                                                                                                                                                                                                                                                                                           0
```

```
RESULT 9
US-08-578-634C-5/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ; MOLECULE TYPE: DNA (genomic) US-08-909-983-3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local Similarity 100.0%;
""" 19; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TELEFAX: (415) 343-4342 INFORMATION FOR SEQ ID NO: SEQUENCE CHARACTERISTICS:
                            ATTORNEY/AGENT INFORMATION:
                                                                            APPLICATION NUMBER:
FILING DATE: 26-JAN-
CLASSIFICATION: 435
PRIOR APPLICATION DATA:
                                                                                                                                       CURRENT APPLICATION DATA:
                                                                                                                                                                                                      COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             tent No.
                                                                                                                                                                                                                                                                                                                               CORRESPONDENCE ADDRESS
                                                                                                                                                                                                                                                                                                                                                               TITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                 NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                               APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TELECOMMUNICATION INFORMATION: TELEPHONE: (415) 343-4341
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CURRENT APPLICATION DATA:
NAME: Abrams, Samuel REGISTRATION NUMBER:
                                                 APPLICATION NUMBER: FILING DATE:
                                                                                                                                                        SOFTWARE:
                                                                                                                                                                     MEDIUM TYPE: Floppy Disk
COMPUTER: IBM PC Compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      COMPUTER READABLE FORM: MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                     COUNTRY:
                                                                                                                                                                                                                                                                                                      STREET:
                                                                                                                                                                                                                                                                                                                  ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STRANDEDNESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICATION NUMBER: FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICATION NUMBER: US/0 FILING DATE: 12-JUN-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    REGISTRATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             779 CAGCAGTACAAACTGATTG 797
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 197 CAGCAGTACAAACTGATTG 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            INFORMATION:
                                                                                                                                                                                                                                      10036
                                                                                                                                                                                                                                                                     New York
New York
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       nucleic acid
DEDNESS: double
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       94104
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Application US/08578634C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    OSMAN,
                                                                                                                                                                                                                                                                                                 E: Pennie & Edmonds LLP
1155 Avenue of The Amer
                                                                                                                                                                                                                                                     USA
                                                                                                                                                                                                                                                                                                                                                                  Harald Zur Hausen
VENTION: DNA CODING FOR A PEPTIDE OF A PAPILLOMA
                                                                                                                                                     Patentin Release #1.0, Version #1.30
                                                                                                                                                                                                                                                                                                                                                                                                                                           Ethel Michele De Villiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                            Vladimir Shamanin
                                                                                                                                                                                                                                                                                                                                                                                                                            Zur Hausen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             linear
                                                                                                        26-JAN-1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RICHARD A
                                                                                                                                                                                                                                                                                                                                                          VIRUS MAIN CAPSIDE PROTEIN AND USE THEREOF
                                                                                                                        US/08/578,634C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Release #1.0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US/08/909,983
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              08/571,758
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                36,627
                                                                                                                                                                                                                                                                                              The Americas
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score 19;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   в96-010
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Version #1.30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 3681;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0;
```

```
밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RESULT 10
US-09-430-010-5/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-08-578-634C-5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match 0.8%; Score 18; Best Local Similarity 100.0%; Pred. No. Matches 18; Conservative 0; Mismatc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          INFORMATION FOR SEQ ID NO: SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                            PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/578
PILING DATE: 26-CAN-1996
ATTORNEY/AGENT INFORMATION:
NAME: Abrams, Samuel B.
                                                              TELEX: 66141 PENNIE
INFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    tent No.
                                                                                                                            NAME: Abrams, Samuel B.
REGISTRATION NUMBER: 30,605
REFERENCE/DOCKET NUMBER: 841
TELECOMMUNICATION INFORMATION:
TELEPHONE: (650) 493-4935
                                                                                                                                                                                                                                                                                                                            COMPUTER: IBM PC COMPAtible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                     COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy Disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NUMBER OF SEQUENCES: 9
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MOLECULE TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                           APPLICATION NUMBER: FILING DATE: CLASSIFICATION:
STRANDEDNESS:
TOPOLOGY: 11n
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NAME/KEY: CDS
LOCATION: 1 .. 672
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TYPE: nucleic acid
STRANDEDNESS: double
               TYPE: nucleic acid
STRANDEDNESS: double
                                                                                                                                                                                                                                                                                                                                                                                                                                          COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        STREET:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TELEPHONE:
                                                                                                                TELEFAX:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TELEFAX:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            REFERENCE/DOCKET NUMBER:
                                               ENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1288 TCGTCTAGCAAAGAAAAA 1305
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    435 TCGTCTAGCAAAGAAAA 418
                                                                                                                                                                                                                                                                                                                                                                                                                           10036
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       , Application US/09430010 6395512
                                                                                                                                                                                                                                                                                                                                                                                                                                                        New York
New York
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             66141 PENNIE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         674 base pairs
                                               674 base pairs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1155 Avenue of The Americas
                                                                                                                (650) 493-4935
(650)493-5556
                                                                                                                                                                                                                                                                                                                                                                                                                                       USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Harald Zur Hausen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (650)493-5556
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ethel Michele De Villiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Zur Hausen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Irene Leigh
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Vladimir Shamanin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Pennie & Edmonds LLP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (650) 493-4935
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DNA CODING FOR A PEPTIDE OF A PAPILLOMA VIRUS MAIN CAPSIDE PROTEIN AND USE THEREOF
                                                                                                                                                                                                                                           08/578,634
                                                                                                                                                                                                                                                                                                           US/09/430,010
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             5:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8484-007
                                                                                                                                                              8484-007
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DB 3;
28;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 674;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0;
```

```
B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                            RESULT 12
US-08-686-968C-222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-09-430-010-5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RESULT 11
US-08-480-640A-222
                                                                                                                                                                                            US-08-480-640A-222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Patent No. 6033904
GENERAL INFORMATION:
APPLICANT: Cochran,
APPLICANT: Junker,
Sequence 222, Application US/08686968C Patent No. 6221361
                                                                                                                                                    Query Match
Best Local S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Best Local Similarity 100 Matches 18; Conservative
                                                                                                                                       Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
                                                                                                                                                                                                                                                                      TELEFAX: (212) 391-052:
INFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
LENGTH: 722 base pairs
TYPE: nucleic acid
Granuscheroscopic circles
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   STREET: LACK CITY: New York CTATE: New York
                                                                                                                                                                                                                                                                                                                                                       ATTORNEY/AGENT INFORMATION:
NAME: White, John P
REGISTRATION NUMBER: 28,678
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                        CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             COMPUTER READABLE FORM: MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                 MOLECULE TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FEATURE:
                                                                                                                                                                                                          ANTI-SENSE:
                                                                                                                                                                                                                  HYPOTHETICAL:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CORRESPONDENCE ADDRESS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TITLE OF INVENTION:
NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                               APPLICATION NUMBER: US/08/480,640A FILING DATE: 07-JUN-1995 CLASSIFICATION: 424
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                             STRANDEDNESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LOCATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NAME/KEY:
                                                                                                                                                                                                                                                                                                                                            TELEPHONE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SOFTWARE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1288 TCGTCTAGCAAAGAAAA 1305
                                                                                                          713 AAATCTTCAAAGATTAGA 730
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       435 TCGTCTAGCAAAGAAAA 418
                                                                                 546 AAATCTTCAAAGATTAGA 563
                                                                                                                                       18;
                                                                                                                                     Similarity 100
18; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         10036
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1185 Avenue of the Americas
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Application US/08480640A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Cochran,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PatentIn Release #1.0, Version #1.25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CDS
                                                                                                                                                                                                                                                linear
                                                                                                                                                                                                                                                                                                                                            (212)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           John P. White
                                                                                                                                                                                                                       z
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Floppy disk
                                                                                                                                                                                                                                                            single
                                                                                                                                                                                                                                  DNA (genomic)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0.8%; bred. No. y 100.0%; Pred. No. Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  672
                                                                                                                                                                                                                                                                                                                                391-0525
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              David E.
                                                                                                                                0.8%; bu
100.0%; Pr
                                                                                                                                                                                                                                                                                                                                             278-0400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Recombinant Swinepox Virus
                                                                                                                                                  Score 18;
                                                                                                                                       Mismatches
                                                                                                                                                               DB 3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DB 4;
                                                                                                                                                              Length 722;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 674;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                       Indels
                                                                                                                                       0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0
                                                                                                                                       0
```

GENERAL INFORMATION:
APPLICANT: Cochran, Mark D.
APPLICANT: Junker, David E.
TITLE OF INVENTION: Recombinant Swinepox Virus

FILE REFERENCE: 39119-H/JML

```
RESULT 14
US-08-998-416-516/c
                                                     Ъ
                                                                             δÃ
                                                                                                                                                            ; HYPOTHETICAL:
; ANTI-SENSE: N
US-08-488-237A-222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT 13
US-08-488-237A-222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-08-686-968C-222
                                                                                                          Matches
                                                                                                                                Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CURRENT APPLICATION NUMBER: US/01
CURRENT FILING DATE: 1996-07-25
NUMBER OF SEQ ID NOS: 231
SOFTMARE: PatentIn Ver. 2.1
SEQ ID NO 222
LENGTH: 722
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
                                                                                                                                                                                                                                                                                                      APPLICATION NUMBER: US/08/486
FILING DATE: 07-UUN-1995
CLASSIFICATION: 424
ATTORNEY/AGENT INFORMATION:
NAME: White, John P
REGISTRATION NUMBER: 28,678
TELECOMMUNICATION INFORMATION:
TELEPHONE: (212) 278-0400
                                                                                                                                                                                                                                     TELEFAX: (212) 391-0525
INFORMATION FOR SEQ ID NO: 3
SEQUENCE CHARACTERISTICS:
LENGTH: 722 base pairs
TYPE: nucleic acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    tent No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LENGTH: 722
TYPE: DNA
ORGANISM: Swinepox virus
                                                                                                                                                                                                                                                                                                                                                                                                                                                             COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                 MOLECULE TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                             CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             UMBER OF SPORTS
                                                                                                                     Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                      COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS SOFTWARE: Patentin Release #1.0,
                                                                                                                                                                                                                  TOPOLOGY:
                                                                                                                                                                                                                          STRANDEDNESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CITY: New York
STATE: New York
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ADDRESSEE:
                                                                   713 AAATCTTCAAAGATTAGA 730
                                                    546 AAATCTTCAAAGATTAGA 563
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                546 AAATCTTCAAAGATTAGA 563
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          713 AAATCTTCAAAGATTAGA 730
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     222, Application US/08488237A
). 6251403
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   18; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             10036
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1185 Avenue of the Americas
                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        USA
                                                                                                                                                                                                               linear
                                                                                                                                                                                      z
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           John P. White
                                                                                                                                                                                                 DNA (genomic)
                                                                                                                                                                                                                          single
                                                                                                0.8%; DI
100.0%; Pr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0.8%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Recombinant Swinepox Virus
                                                                                                                                                                                                                                                                                                                                                                                               US/08/488,237A
                                                                                                                                                                                                                                                                               222:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US/08/686,968C
                                                                                                                 Score 18; Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 18;
Pred. No.
                                                                                                      Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Mismatches
                                                                                                                No.
                                                                                                                                                                                                                                                                                                                                                                                                                        Version #1.25
                                                                                                                 DB 4; Length 722; 28;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DB 4;
28;
                                                                                                      0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 722;
                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                   0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0,
                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                   0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0
```

```
뫄
                                                                                                                                                                                                                                                                                     Qγ
                                                                                                                                                                                            US-08-811-177A-3/c
                                                                                                                                                                                                            RESULT 15
                                                                                                                                                                                                                                                                                                                                                                                   US-08-998-416-516
                                                                                                                                                                                                                                                                                                                      Query Match
Best Local S
Matches 18
                                                                                                                                            Patent No. 6025172 GENERAL INFORMATION:
                                                                                                                                                                           Sequence 3,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 516, Application US/08998416 Patent No. 6239264
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TELEFAX: 919-541-8689 INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GENERAL INFORMATION:
                                               NUMBER OF SEQUENCES: 1
CORRESPONDENCE ADDRESS:
                                                                               APPLICANT: Dani, Maria
APPLICANT: Catello, Ser
TITLE OF INVENTION: Iso
TITLE OF INVENTION: the
                                                                                                                                                                                                                                                                                                                                                                                                                MOLECULE TYPE:
ORIGINAL SOURCE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         REFERENCE/DOCKET NUMBER: PF. TELECOMMUNICATION INFORMATION: TELEPHONE: 919-541-8587
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRIOR APPLICATION DATA:
APPLICATION NUMBER: CH 0
FILING DATE: 31-DEC-1996
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NUMBER OF SEQUENCES: CORRESPONDENCE ADDRESS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT:
                   STREET:
                                                                                                                                                                                                                                                                                                                      Local Similarity
nes 18; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                  TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                    ORGANISM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS SOFTWARE: Patentin Release #1.0,
                                  ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                              STRANDEDNESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       REGISTRATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CLASSIFICATION: 435
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICATION NUMBER: FILING DATE: 24-DE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STREET:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ADDRESSEE:
                                                                                                                                                                                                                                                         716 TTTCAGGAAAAGTATAGT 699
                                                                                                                                                                                                                                                                                       647 TTTCAGGAAAAGTATAGT 664
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                27709
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1: 3054 Cornwallis Road
Research Triangle Park
No. 6239264th Carolina
                                                                                                                                                                           Application US/08811177A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           nucleic acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Meigs,
E: Rothwell, Figg, Ernst & Kurz, p.c.
701-E 555 13th Street, N.W.
3shington, DC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            858 base pairs
                                                                                                                                                                                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Pohlmann, Rainer
Steiner, Sabine
Mohr, Christine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Wendland, Jurgen
Knechtle, Philipp
                                                                                                                                                                                                                                                                                                                                                                                                    PAG1363UP
                                                                                                                                                                                                                                                                                                                                                                                                                                                 Linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Rebischung, Corinne
ENTION: GENOMIC DNA SEQUENCES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Philippsen,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            No.
                                                                                                                                                                                                                                                                                                                                                                                                                                DNA (genomic)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      J. Timothy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   24-DEC-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                              single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       6239264artis Corporation
                                                                Isolation and Sequencing of
the Hazel FAD2-N Gene
11
                                                                                                             Sergio
                                                                                                                                                                                                                                                                                                                                     100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AND USES THEREOF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CH 0016/97
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US/08/998,416
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    38,241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Peter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PF/5-30306/A/CGC1976
                                                                                                                                                                                                                                                                                                                     0;
                                                                                                                                                                                                                                                                                                                                    Score 18;
Pred. No.
                                                                                                                                                                                                                                                                                                                     Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Version #1.30
                                                                                                                                                                                                                                                                                                                                    DB
28;
                                                                                                                                                                                                                                                                                                                                                    4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      OF ASHBYA GOSSYPII
                                                                                                                                                                                                                                                                                                                     0;
                                                                                                                                                                                                                                                                                                                                                 Length 858;
                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                   0;
```

0;

```
COMPUTER READALE FORM:

COMPUTER READALE FORM:

MEDIUM TYPE: Diskette

COMPUTER: IBM Compatible

OPERATING SYSTEM: DOS

SOSTMARE: FESTSEM FOR WINDOWS Version 2.0

CURRENT APPLICATION DATA:

APPLICATION NUMBER: US/08/811,177A

FILING DATE: 04 - MAR - 1997

CLASSIFICATION NUMBER: US/08/811,177A

PRIOR APPLICATION NUMBER: 135,377

REFERENCE/DOCKET MUMBER: 135,377

REFERENCE/DOCKET MUMBER: 35,377

REFERENCE/DOCKET MUMBER: 35,304

TELEPAN: 202-783-6031

TELEPAN: 202-783-6031

TELEPAN: 202-783-6031

TELEPAN: 1133 base pairs

TORNATION FOR SEO ID NO: 3:

SEQUENCE CHARACTERISTICS:

LENGTH: 1133 base pairs

TYPE: uncleic acid

STRANDEDMESS: sinje

TOPOLOGY: linear

MULECULE TYPE: CDNA to mRNA

US-08-811-177A-3

QUETY MATCH

US-08-811-177A-3

QUETY MATCH

18 TORNATION HOMEN

OF MISMATCHES O: Indels O: Gaps

O: 1443 GTGAGGGAGGAGAGAGAGAATGGAA 87

Search completed: June 24, 2003, 17:19:07

Job time: 82 secs
```

	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			*	, Ø, ·	
	2, -		•			
. The s			•			
1		**	· · · · · ·			, ,1, :
Į.						*
	Nan.					
**					* * * * * * * * * * * * * * * * * * * *	
64 (64. 19.	· ·				, .	·
	* * * * * * * * * * * * * * * * * * * *			4		•
				70		. · · · · · · · · · · · · · · · · · · ·
		and the second second				,
	- 2 ×	10'				
			7			ය.
				*		
*		<b>A</b>				
5e <sup>3</sup>	Pr 10 TO	* 18 * *	- (V)		4	
	$\mathbf{x} = \begin{bmatrix} \mathbf{v} & \mathbf{v} & \mathbf{v} \end{bmatrix}$		, , , , , , , , , , , , , , , , , , ,		en je je roma	
ri i			•		*	
		÷i.		Sug		
					*	
			w.		٠	•
<b>3</b> 6					*	
					70	THE THE STATE OF T
				* *		
			v		* b	
5.c		• * * *				Service Services
ja		, a		****		
24	", "					4
ar Control	<b>6 .</b>	* * * * * * * * * * * * * * * * * * * *				*
) }-						• •
				•	· *	
						•
,fr. //	· ·			•		
1					·	
*						•
i b	4					• *
		* * * * * * * * * * * * * * * * * * * *	*			
	,			, Ly	•	, K
	ş#			* .		
					***	etr
T.		, <b>*</b>		*		
4	6					
i in	10		y of the second			
					La Maria	

```
Result
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Minimum DB
Maximum DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Run
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Post-processing: Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Word size
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      OM nucleic - nucleic search, using sw model
                                                                                    000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence:
        O O
                                                                                                                                                                                               ဂဂ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           seq
        length: 0
length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         OLIGO_NUC Gapext 60.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-09-870-406A-32
2160
1 gaattccccacgtcaacgtg.....tcgtctctacctaatcaaca 2160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  June 24, 2003, 16:43:14; Search time 220 Seconds (without alignments)
14407.467 Million cell updates/sec
     Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1042519 seqs, 733713590 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Published_Applications_NA: *
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /cgn2_6/ptodata/2/pubpna/US07_PUBCOMB.seq:*
/cgn2_6/ptodata/2/pubpna/US07_REW_PUB.seq:*
/cgn2_6/ptodata/2/pubpna/US06_REW_PUB.seq:*
/cgn2_6/ptodata/2/pubpna/US06_PUBCOMB.seq:*
/cgn2_6/ptodata/2/pubpna/US07_NEW_PUB.seq:*
/cgn2_6/ptodata/2/pubpna/PCTUS_PUBCOMB.seq:*
/cgn2_6/ptodata/2/pubpna/PCTUS_PUBCOMB.seq:*
/cgn2_6/ptodata/2/pubpna/US08_NEW_PUB.seq:*
/cgn2_6/ptodata/2/pubpna/US08_PUBCOMB.seq:*
/cgn2_6/ptodata/2/pubpna/US09_NEW_PUB.seq:*
/cgn2_6/ptodata/2/pubpna/US09_PUBCOMB.seq:*
/cgn2_6/ptodata/2/pubpna/US09_NEW_PUB.seq:*
/cgn2_6/ptodata/2/pubpna/US09_NEW_PUB.seq:*
/cgn2_6/ptodata/2/pubpna/US09_NEW_PUB.seq:*
/cgn2_6/ptodata/2/pubpna/US09_NEW_PUB.seq:*
/cgn2_6/ptodata/2/pubpna/US00_NEW_PUB.seq:*
/cgn2_6/ptodata/2/pubpna/US00_NEW_PUB.seq:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GenCore version 5.1.6 Copyright (c) 1993 - 2003 Compugen Ltd
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DB
                                                                              US-10-159-901-32

US-10-159-901-32

US-10-159-901-18

US-09-870-406A-18

US-09-870-406A-19

US-09-870-406A-17

US-09-870-406A-17

US-10-159-901-15

US-10-159-901-15

US-10-159-901-15

US-10-159-901-16

US-10-159-901-16

US-09-870-406A-15

                                                        US-09-938-842A-600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2085038
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Description
                            Sequence
Sequence
                                                                                                                                                                                                                         Sequence
Sequence
                                                                                                                                                                                                                                                                                                       Sequence
Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence
Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence
                                                                                    Sequence
                                                                                                           Sequence
                                                                                                                                     Sequence
                                                                                                                                                                  Sequence
                                                                                                                                                                                            Sequence
                                                                                                                                                                                                                                                                                Sequence
                                                                                                                                                                                                                                                                                                                                                                 Sequence
                                                                                                                                                                                                                                                                                                                                                                                        Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence
                                                 16, Appl
7575, Ap
7575, Ap
600, App
                                                                                                                               18, Appl
18, Appl
9, Appli
9, Appli
17, Appl
17, Appl
17, Appl
17, Appl
11, Appl
16, Appl
16, Appl
16, Appl
16, Appl
16, Appl
17, Appl
18, Appl
18, Appl
19, Appl
11, Appl
11, Appl
11, Appl
11, Appl
11, Appl
11, Appl
12, Appl
13, Appl
14, Appl
15, Appl
16, Appl
17, Appl
18, Appl
18, Appl
19, Appl
19, Appl
10, Appl
11, Appli
Appli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RESULT 1
US-10-159-901-32
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GENERAL INFORMATION:
APPLICANT: LAGARIAS, JOHN
APPLICANT: KOICHI, TAKAYUKI
APPLICANT: KOICHI, TAKAYUKI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 32, Application US/10159901 Publication No. US20030073235A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT:
```

	000	0 0		O	0 0	00000
443 543	40 41 42	35 37 38	3432	28 30 31	25 26 27	20 21 22 23 24
18 18 18	18 18	18 18 18	18 18	18 18 18	18 19	19 19 19
		00000				0.9
494 494 494	492 492 492	409 424 470 486 492	401 401	170 291 297 353	127197 28 28 28	1609 1609 1609 1609 14286
10	999	99299	10	1010	999	10 9 9
US-10-076-622-449 US-09-551-621-449 US-09-604-287A-449	US-09-902-941-1041 US-09-849-626-1041 US-10-017-754-1041	US-09-918-995-6167 US-10-198-846-917 US-09-864-761-10807 US-09-918-995-19640 US-09-736-457-1041	US-09-946-807-198 US-09-795-668-198 US-09-795-686-198	US-09-864-761-24010 US-09-294-093B-2204 US-09-864-761-27449 US-09-783-590-9844	US-09-754-853A-1 US-10-159-901-31 US-09-870-406A-31	US-10-340-580-1 US-10-340-581-1 US-10-340-582-1 US-10-340-693-1 US-09-070-927A-162
Sequence 449, App Sequence 449, App Sequence 449, App		Sequence 616/, Ap Sequence 917, App Sequence 10807, A Sequence 19640, A Sequence 1041, Ap		Sequence 24010, A Sequence 2204, Ap Sequence 27449, A Sequence 9844, Ap	Sequence 1, Appli Sequence 31, Appl Sequence 31, Appl	Sequence 1, Appli Sequence 1, Appli Sequence 1, Appli Sequence 1, Appli Sequence 162, App

## ALIGNMENTS

```
SOFTWARE: PatentIn version 3.0
SEQ ID NO 32
LENGTH: 2160
TYPE: DNA
ORGANISM: Arabidopsis thaliana
                                                                                                                                                                                                                                                                                                                                                                               TITLE OF INVENTION: LIGHT CONTROLLED GENE EXPRESSION UTILIZING FILE REFERENCE: 407T-907731US CURRENT APPLICATION NUMBER: US/10/159,901 CURRENT FILING DATE: 2002-05-29 PRIOR APPLICATION NUMBER: 60/294,463 PRIOR FILING DATE: 2001-05-29 NUMBER OF SED ID NOS: 57
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICANT:
                                                                        FEATURE:
NAME/KEY:
LOCATION:
                                                                                                                                                                  NAME/KEY:
                                                                                                                                                                                                                                                     FEATURE:
NAME/KEY: CDS
LOCATION: (248)..(469)
                            NAME/KEY:
LOCATION:
NAME/KEY: CDS
                                                        FEATURE:
                                                                                                                                                     FEATURE
                                                                                                                                                                                               FEATURE:
                                                                                                                                                                                                             NAME/KEY: CDS
LOCATION: (653)..(769)
                                                                                                                                                                                                                                               FEATURE:
                                                                                                                        OCATION:
                                                                                                                                     IAME/KEY:
                                            CDS
                                                                                                                  CDS
(1034)..(1126)
                                                                                                                                                                CDS
(852)..(947)
                           (1419)..(1523)
                                                                        (1213)..(1344)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FRANKENBERG, NICOLE GAMBETTA, GREGORY MONTGOMERY, BERONDA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              HETEROLOGOUS PHYTOC
```

2 4 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
Oy  Oy  Oy  Oy  Oy  Oy  Oy  Oy  Oy  Oy	o vis
241 19 241 19 301 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	LO FEL NAM LOC
Best Local Si Matches 2160;  1 Gal 2 Gal 1 Gal 2 Gal 1 Gal 2 Gal 2 Gal 1 Gal 2 Gal 2 Gal 2 Gal 3	CATIC ATURE ATURE (E/KE) (ATION 59-90
SINILO O; CGGAARTI CCCATR CCCATR CCCATR CCCATR CCTGTG GTAAL AGAAA CCTTAAL AGAAA CCTTAAL AGAAA CCTTAAL AGAAA AGAAA AGAAA AGAAAA AAGAAA AATTGG CCAGGG LIIII CCACGT CCTTGGAAAA ATTGG ATTTGC ATTGC CCACGT CCTTAAL AGAAAA ATTGGC LIIIII CCACAC CCTTAAL ATTGGC ATTTGC CCACGGG LIIIII CCACAC CCTTAAL ATTGGC CCACGGG LIIIIII CCACAC CCTTGGAAAATTGGC CCACGGGAAAC CCTTGGAAAATTGGC CCACGGGAAAC CCTTGGAAATTGGC CCACGGGAAAC CCTTGGAAAATTGGC CCACGGGAAAC CCTTGGAAATTGGC CCACGGGAAAC CCTTGGAAATTGGC CCACGGGAAAC CCTTGGAAATTGGC CCACGGGAAAC CCTTGGAAATTGGC CCACGGGAAAC CCTTGGAAATTGGC CCACGGAAAC CCTTGGAAATTGGC CCACGGAAAC CCTTGGAAAAC CCTTGAAAAC CCTTGGAAAAC CCTTGGAAAAC CCTTGAAAAC  CCTTGAAAAC CCTTGAAAAC CCTTGAAAAC CCTTGAAAAC CCTTGAAAAC CCTTGAAAAC CCTTGAAAAC CCTTGAAAAAC CCT	N (1 ; Cb; 1; (1) 1-32
Similarity O; Conserv GAATTCCCCA GAATTCCCCA CATGACTCCCA ACCATGACTCC	612).
### cast Smilling	UCCATION (1612)(1662)  NAME/KEY: CDS US-10-159-901-32  OHER: US-10-159-901-32
100.0%, 100.0%, 100.0%, 1100.0%, 1100.0%, 1100.0%, 11101 1101 1	ي ي
O; PROTE 2160; O; MISMATCHAR GACTGTGCATTCCACG CACTGTGCATTCCACG CACTGTGCATTCCACG CACTGTGCATTCCACG CACTGTGCATTCCACG CACTGTGCATTCCACG CACTGTGCATTCCACG CACTGTGCATTCATTGTGT CACATTCATTGTGT CACAGGAGAGAAGAAGAAGAAGAAGAAGAAGAAGAAGAAG	
Tream to the state of the state	
Cones Cones	
DB 9;  O;  ITGCCA,  TTGCCA,  TTGCCA,  TTGCCA,  TTGCCA,  TTGCCA,  TTGCCA,  TTTTGCTTGCT  TTGGGTT,  TTGGGTT,  TTGGTTCA,  TTG	
Indiana Control Contro	
PER PROPERTY OF THE PROPERTY O	
2160; 0; 0; 1:11-11;	
RECHARCH SIGNIARITY 100.0% SECTED 100.0% SECTION DE 9: Length 2160; CORRETTELVE 00, Fred. No. 0. DB 9: Length 2160; 100.0% SECTED 100.0% SECTE	
	us-0
8 54 B 54 B 55 B 55 B 55 B 55 B 55 B 55	us-09-870-406a-32.oli.rnpb
	0-4
Oy Oy Ob Ob Ob Ob Ob Ob Ob Ob Ob Ob Ob Ob Ob	)6a-
DB 961 AGTTARGCTGGAGTTATCAAGTCTCTATTGTCCAAAACTGATTCATTTATACTGTGTGTTATCAAGTCTTATTGTCCAAAACTGATTCATTTTATACTGTGTTATCAAGTCTTTATCAAGTCTTTATCAAGTCTTTATCAAGTCTTTATCAAGTCTTTATCAAGTCTTTATCAAGTCTTTATCATTTTAACTGTGTTATCAAGTCTTTATCAAGTCTTTATCAAGTCTTTATCAAGTCTTTATCAAGTCTTTATCAAGTCTTTATCAAGTCTTTATCAAGTCTTTATCAAGTCTTTATCAAGTCTTTATCAAGTCTTTATCAAGTCTTTATCAAGTCTTTATCAAGTCTTTATCAAGTCTTTATCAAGTCTTTAAAAAAAA	32.0
99 102 102 108 1141 1141 1141 1141 11201 A 1201 A 1	Ĭ:.
961 1021 6 1021 6 1021 6 1021 6 1021 6 1081 CA	qdua
AGETT. AGGTT. AG	_
61 AGTTATGCTGGAGTTATGAGGTCTGTATTGTCCAAACTGATGTTCAATATT 1 GTTCTTCTTTAGGGACTTATGAGGTCTGTATTGTCCAAACTGATGTTCAATATT 2 GTTCTTTTTTTAGGGACCTTAATGCTGTCATATTTTTCAATATT 2 GTTCTTTTTTAGGGACCTTAATGCTTTTGATTGTCCAAACTGATGTTCAATATT 3 GTTCTTTTTAGGAACTTAATGCTTTTGCATTGTCACTTAGTTCACACAGAGGATTAGTTCAATATT CAAGTATTATAACAAGATAATGCTCAATGTCAATTAGTTCAATATATT CAAGTATTATAACAAGATAATGTCCAATGTAAACTTAGTCAAAATAGTATATATA	
SGAGT:	
TEATCAC	
SGTCTW GTCTW GTCTW GTCTW GTCTW GTCTW GTCTW TTCAT TTCAT TTCAT TTCAT TTCAT	
	1
TEGGCANA  CHILLI  CAGTE  CAGT  CAGTE  CAGTE  CAGTE  CAGTE  CAGTE  CAGTE  CAGTE  CAGTE  CAGTE	1
RACTES  IIIII  IIIIIIIIIIIIIIIIIIIIIIIIIIII	1
TITETTO TO THE TOTAL TO THE TOT	
CACAA CCACAA CCACAA CCACA	
DD DD D1	
961 AGTIANGCTEGAGTTATACAGGTCTEANTGTCCAMACGANGCTCANTACTACAGGTCACCACACACA	
Page 961 AGTTATGCTGGAGGTTATGCAAACTGAACTGAATGTTCAATATTTTCATATGTCAAACTGAATGTTCAATATTTTCAATATTTTCAATATTTTCAATATTTTCAATATTTTCAATATTTTACTGAATGTTCAAAACTGAATGTTCAATATTTTACTGAATGTTCAAAACTGAATGTTCAATATTTTACTGAATGTTCAAAACTGAATGTTCAATATTTTACTGAATGTTCAATATTTTACTGAATGTTCAATATTTTACTGAATGTTCAATATTTTACTGAATGTTCAATATTTTACTGAATGTTCAATATTTTACTGAATGTTCAATATTTTACTGAATGTTCAATATTTTACTGAATGTTCAATATTTACTGAATGTTCAATATTTACTGAATGTTCAATATTTACTGAATGTTCAATATTACTGAATGTTCAATATTACTGAATGTTCAATATTACTGAATGTTCAATATTACAAGAATAATGTTCAAATATACTGAATGTTCAAATAATGTTCAAATAAACTGTTAATGTTCAAATAAACAATAATGTTCAAATAAACTGTTGAATGTAAAAAAAA	
N	

DЬ δ Ф δ 9 δ Ф

Дb Ϋ́ Дb γQ Ъ δ DЬ

Qγ 밁 Š 밁

```
RESULT 3
US-10-159-901-18/c
Sequence 18, Application US/10159901
Publication No. US20030073235A1
GENERAL INFORMATION:
                                                                      APPLICANT: LAGARIAS, JOHN
APPLICANT: KOICHI, TAKAYUKI
APPLICANT: FRANKENBERG, NICOLE
                                     TITLE OF
                                                     APPLICANT:
                                                               APPLICANT:
                                                                                                                                                                                                                                2101
                                                                                                                                                                                                                                                                                        2041
                                                                                                                                                                                                                                                                                                                                                  1981
                                                                                                                                                                                                                                                                                                                                                                            1981
                                                                                                                                                                                                                                                                                                                                                                                                                                     1921
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1861
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1861
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1801
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1801
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1741
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1741
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1681
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1681
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1621
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1621
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1561
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1501
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1561
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1501
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1441
                    T: MONTGOMERY, BERONDA
INVENTION: LIGHT CONTROLLED GENE EXPRESSION UTILIZING
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1441
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1381
                                                                                                                                                                                                             TIGTTTGAGTTACCATGCATTGTAGTTTTACAAGTGTAGCTCTCAGCCCTTCATCAAAAT
                                                                                                                                                                                                                                                                       TTGTTTGAGTTACCATGCATTGTAGTTTTACAAGTGTAGCTCTCAGCCCTTCATCAAAAT
                                                                                                                                                                                                                                                                                                                              GATATATGTGAACAAGTCAGATTTCAGAGTCATCAACACAAGAGGACGTGAACTTAGGGA 1980
                                                           GAMBETTA, GREGORY
                                                                                                                                                                                                                                                                                                                                                                                         GATATATGTGAACAAGTCAGATTTCAGAGTCATCAACACAAGAGGACGTGAACTTAGGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TTGATTACTTTCCAGAGTACCAAACAGAAGATGGAACTGTAAGCGATAAACGAAGTATCA 1860
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TTGATTACTTTCCAGAGTACCAAACAGAAGATGGAACTGTAAGCGATAAACGAAGTATCA 1860
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AGGAGCTGCTAAGGGATTTCCTGTTCAATGGGGTGGATGAGTTAGGCACAAAAACATTCA 1800
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CATTAGTGTCCCCATTATTAATTAGCTTGTGAAGATGTTGAAAATGATTTGAACAAAATC 1740
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CATTAGTGTCCCCATTAGTAAGCTTGTGÄAGATGTTGAAAATGATTTGAACAAAATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CATGGTCTTCTTAAAAGATTAGTAGGTGAAGCAAAGGCAAAGGTATAAAAGATTTGATCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AGGAGCTGCTAAGGGATTTCCTGTTCAATGGGGTGGATGAGTTAGGCACAAAAACATTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CATGGTCTTCTTAAAAGATTAGTAGGTGAAGCAAAGGCAAAGGTATAAAAGATTTGATCC 1680
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ACAGACACTGTATCTGTATTGTTACAATGGATATTGATTTGGTGTTTTGCAGGATCCTGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ACAGACACTGTATCTGTATTGTTACAATGGATATTGATTTTGGTGTTTTGCAGGATCCTGGA 1620
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ACCTGACATGGCGAGCACAAAAGGTGATTTCATTTTCTTTTTGTGTAATTTGCATGTTTGA 1560
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GAAACTTTGACTGAGAATCTATCATCTTCCTTCCTACAGGCATGGCTTGAGATGACAATCC 1440
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ACCTGACATGGCGAGCACAAAAGGTGATTTCATTTCCTTTTGTGTAATTTGCATGTTTGA 1560
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAGTGAGGGAGGAGATGGAACCATCTCATGTGAGAGCCAATTGTGAAGCACAACACAGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AAGTGAGGAGGAGATGGAACCATCTCATGTGAGAGCCAATTGTGAAGCACAAGAGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GAAACTTTGACTGAGAATCTATCATCTTCTTCCTACAGGCATGGCTTGAGATGACAATCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               HETEROLOGOUS PHYTOCHRO
                                                                                                                                                                                                               2160
                                                                                                                                                                                                                                             2160
                                                                                                                                                                                                                                                                       2100
                                                                                                                                                                                                                                                                                                     2100
                                                                                                                                                                                                                                                                                                                                                                                         1980
                                                                                                                                                                                                                                                                                                                                                                                                                                                 1920
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1920
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1800
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1680
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1740
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1620
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1500
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1500
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1440
                                                                                                                                                           RESULT 5
US-10-159-901-9
                                                                                                                                                                                                                          8
Sequence 9, Application US/10159901
Publication No. US20030073235A1
GENERAL INFORMATION:
APPLICANT: LAGARIAS, JOHN
APPLICANT: KOICHI, TAKAYUKI
APPLICANT: KOICHI, TAKAYUKI
APPLICANT: GAMBETTA, GREGORY
APPLICANT: GAMBETTA, GREGORY
APPLICANT: MONTGOMERY, BERONDA
TITLE OF INVENTION: LIGHT CONTROLLED GENE EXPRESSION UTILIZING
FILE REFERENCE: 407T-907731US
                                                                                                                                                                                                                                                   Qy
                                                                                                                                                                                                                                                                                                                                     ; OTHER INFORMATION: Primer US-09-870-406A-18
                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICANT: MONTGOMERY, BERONIA
TITLE OF INVENTION: HY2 FAMILY OF BILIN REDUCTASES
FILE REFERENCE: 407T-907720US
CURRENT APPLICATION NUMBER: US/09/870,406A
PRIOR APPLICATION NUMBER: 60/271,758
PRIOR APPLICATION NUMBER: 60/271,758
PRIOR FILING DATE: 2001-02-26
PRIOR FILING DATE: 2001-02-06
PRIOR FILING DATE: 2000-06-08
NUMBER OF SEQ ID NOS: 57
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FILE REFERENCE: 407T-907731US
CURRENT APPLICATION NUMBER: US/10/159,901
CURRENT FILING DATE: 2002-05-29
PRIOR APPLICATION NUMBER: 605/294,463
PRIOR FILING DATE: 2001-05-29
NUMBER OF SEQ ID NOS: 57
SOFTWARE: Patentin version 3.0
SEQ ID NO 18
LENGTH: 36
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RESULT 4
US-09-870-406A-18/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Š
                                                                                                                                                                                                                                                                                                                                                                                                       SOFTWARE: PatentIn
SEQ ID NO 18
LENGTH: 36
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ; OTHER INFORMATION: Primer US-10-159-901-18
                                                                                                                                                                                                                                                                               Matches
                                                                                                                                                                                                                                                                                             Query Match
Best Local (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GENERAL INFORMATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence 18, Application US/09870406A
Publication No. US20030104379A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICANT: LAGARIAS, JOHN
APPLICANT: KOICHI, TAKAYUKI
APPLICANT: FRANKENBERG, NICOLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                      FEATURE:
                                                                                                                                                                                                                                                                                                                                                                           ORGANISM: Artificial Sequence
                                                                                                                                                                                                                                                                                                                                                                                              TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TYPE: DNA
ORGANISM: Artificial
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FEATURE:
                                                                                                                                                                                                             Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        l Similarity
28; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        l Similarity
28; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GAMBETTA, GREGORY
                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Conservative 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                        version 3.0
                                                                                                                                                                                                                                                                                       1.3%;
                                                                                                                                                                                                                                                                          0;
                                                                                                                                                                                                                                                                                     Score 28;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 28;
Pred. No.
                                                                                                                                                                                                                                                                       Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Mismatches
                                                                                                                                                                                                                                                                                     DB 9; L
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                . 0.00038;
                                                                                                                                                                                                                                                                                                  Length 36;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 36;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
              HETEROLOGOUS PHYTOC
                                                                                                                                                                                                                                                                    0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0;
                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
```

밁 δÃ Вb δδ B Qy В δô 망 Qy В δÃ Вb δÃ В VQ. 맑 δÃ Ъ Qy 밁 Q В Qy рЬ

```
밁
                                                                                                                                                                                                                                                          멍
                                                                                                                                                                                                                                                                                      Š
                                                                                                                                                                                   US-10-159-901-17
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-09-870-406A-9
                                                                                                                                                                                                                                                                                                                                                                                             US-09-870-406A-9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ; OTHER INFORMATION: Primer US-10-159-901-9
                                                                                                                                 Sequence 17, Application US/10159901 Publication No. US20030073235A1 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence 9, Application US/09870406A Publication No. US20030104379A1
                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SOFTWARE: 1
SEQ ID NO 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GENERAL INFORMATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQ ID NO 9
                                                            APPLICANT: LAGARIAS, JOHN
APPLICANT: KOICHI, TAKAYUKI
APPLICANT: FRANKENBERG, NICOLE
APPLICANT: GAMBETTA, GREGORY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRIOR APPLICATION NUMBER: 60/210,286 PRIOR FILING DATE: 2000-06-08
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CURRENT APPLICATION NUMBER: US/09/870,406A
CURRENT FILING DATE: 2002-09-04
PRIOR APPLICATION NUMBER: 60/271,758
PRIOR FILING DATE: 2001-02-26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICANT: MONTGOMERY, BERONDA
TITLE OF INVENTION: HY2 FAMILY OF BILIN REDUCTASES
FILE REFERENCE: 407T-907720US
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PRIOR FILING DATE: 2001-05-29
NUMBER OF SEQ ID NOS: 57
SOFTWARE: PatentIn version 3.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CURRENT APPLICATION NUMBER: US/10/159,901
CURRENT FILING DATE: 2002-05-29
              APPLICANT: MONTGOMERY, BERONDA
TITLE OF INVENTION: LIGHT CONTROLLED GENE EXPRESSION UTILIZING HETEROLOGOUS PHYTOCHRO
FILE REFERENCE: 407T-907731US
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PRIOR APPLICATION NUMBER: 60/294,463
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NUMBER OF SEQ ID NOS: 57
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT: LAGARIAS, APPLICANT: KOICHI,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LENGTH: 22
TYPE: DNA
ORGANISM: Artificial
CURRENT APPLICATION NUMBER: US/10/159,901
                                                 APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                       LENGTH: 22
TYPE: DNA
ORGANISM: Artificial Sequence
                                                                                                                                                                                                                                                                                                                                                                                                             OTHER INFORMATION: Primer
                                                                                                                                                                                                                                                                                                                                                                                                                              FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FEATURE:
                                                                                                                                                                                                                                                                                                                                         Local Similarity
                                                                                                                                                                                                                                                                                      762 CAATGCAGGTTTAACTTCAGCA 783
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          762 CAATGCAGGTTTAACTTCAGCA 783
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1 CAATGCAGGTTTAACTTCAGCA 22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PatentIn version 3.0
                                                                                                                                                                                                                                                      CAATGCAGGTTTAACTTCAGCA 22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 KOICHI, TAKAYUKI
FRANKENBERG, NICOLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GAMBETTA, GREGORY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      JOHN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1.0%;
                                                                                                                                                                                                                                                                                                                                        1.0%; Score 22;
100.0%; Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0;
                                                                                                                                                                                                                                                                                                                         0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score 22;
Pred. No.
                                                                                                                                                                                                                                                                                                                         Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Mismatches
                                                                                                                                                                                                                                                                                                                                        DB 9;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DB 9;
                                                                                                                                                                                                                                                                                                                         0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0;
                                                                                                                                                                                                                                                                                                                                                       Length 22;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 22
                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
                                                                                                                                                                                                                                                                                                                      0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                        0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0;
                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                    δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Q
```

```
RESULT 9
US-10-159-901-10/c
                                                                                                                                                                                                                                                                                                                                                                                                                                ; OTHER INFORMATION: Primer US-09-870-406A-17
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RESULT 8
US-09-870-406A-17
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ; OTHER INFORMATION: Primer US-10-159-901-17
                                                                                                                                                               GENERAL INFORMATION
                                                                                                                                                                              Sequence 10, Application US/10159901 Publication No. US20030073235A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQ ID NO 17
LENGTH: 30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NUMBER OF SEQ ID NOS: 57
SOFTWARE: PatentIn version 3.0
SEQ ID NO 17
LENGTH: 30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                                                                                                                                                             Query Match
Best Local 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Publication No. US20030104379A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PRIOR APPLICATION NUMBER: 60/294,463
PRIOR FILING DATE: 2001-05-29
NUMBER OF SEC ID NO.
APPLICANT: MONTGOMERY, BERONDA
TITLE OF INVENTION: LIGHT CONTROLLED GENE EXPRESSION UTILIZING HETEROLOGOUS PHYTOC FILE REFERENCE: 407T-907731US
CURRENT APPLICATION NUMBER: US/10/159,901
CURRENT FILING DATE: 2002-05-29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICANT: MONTGOMERY, BERONDA
TITLE OF INVENTION: HY2 FAMILY OF BILIN REDUCTASES
FILE REFERENCE: 407T-907720US
CURRENT APPLICATION NUMBER: US/09/870,406A
CURRENT FILING DATE: 2002-09-04
                                                                                     APPLICANT: LAGARIAS, JOHN
APPLICANT: KOICHI, TAKAYUKI
APPLICANT: FRANKENBERG, NICC
APPLICANT: GAMBETTA, GREGOR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NUMBER OF SEQ ID NOS: 57
SOFTWARE: PatentIn version 3.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PRIOR FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PRIOR EILING DATE: 2001-02-26
PRIOR APPLICATION NUMBER: 60/210,286
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRIOR APPLICATION NUMBER: 60/271,758
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT: LAGARIAS, JOHN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ORGANISM: Artificial FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ORGANISM: Artificial Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TYPE: DNA
                                                                                                                                                                                                                                                                                                            383 GTCTCTGCTGTGTCGTATAAGG 404
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       383 GTCTCTGCTGTGTCGTATAAGG 404
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            17, Application US/09870406A
                                                                                                                                                                                                                                                                                       9 GTCTCTGCTGTGTCGTATAAGG 30
                                                                                                                                                                                                                                                                                                                                                            22;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     9 GTCTCTGCTGTGTCGTATAAGG 30
                                                                                                                                                                                                                                                                                                                                                                           1.0%;
Similarity 100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1.0%;
Similarity 100.0%;
                                                                                     FRANKENBERG, NICOLE GAMBETTA, GREGORY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      KOICHI, TAKAYUKI
FRANKENBERG, NICOLE
GAMBETTA, GREGORY
                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2000-06-08
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2002-09-04
                                                                                                                                                                                                                                                                                                                                                            0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0,
                                                                                                                                                                                                                                                                                                                                                                           Score 22;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Score 22;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Mismatches
                                                                                                                                                                                                                                                                                                                                                            Mismatches
                                                                                                                                                                                                                                                                                                                                                                             DB 9;
0.57;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DB 9;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0.57;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 30;
                                                                                                                                                                                                                                                                                                                                                                                           Length 30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                            0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0;
                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                          0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0;
```

0

```
밁
                                                                                                                                                                                                                                                                                                                            Š
                                                                                                                                                                                                                                    US-10-159-901-16/c
                                                                                                                                                                                                                                                    RESULT 11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US-10-159-901-15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밓
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        us-10-159-901-10
                                                                                                                                                                                     GENERAL INFORMATION:
                                                                                                                                                                                                    Sequence 16, Application US/10159901 Publication No. US20030073235A1
                                                                                                                                                                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                                                                                                                                                                          Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 15, Ap Publication No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SOFTWARE: PatentIn version 3.0 SEQ ID NO 15
                                                                                                                                      APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
NUMBER OF
         CURRENT APPLICATION NUMBER: US/10/159,901
CURRENT FILING DATE: 2002-05-29
PRIOR APPLICATION NUMBER: 60/294,463
PRIOR FILING DATE: 2001-05-29
                                                                       APPLICANT: GAMBETTA, GREGORY
APPLICANT: MONTGOMERY, BERONDA
TITLE OF INVENTION: LIGHT CONTROLLED GENE EXPRESSION UTILIZING HETEROLOGOUS PHYTOCHRO
FILE REFERENCE: 407T-907731US
                                                                                                                      APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CURRENT APPLICATION NUMBER: US/10/159,901
CURRENT FILING DATE: 2002-05-29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT: LAGARIAS, JOHN
APPLICANT: KOICHI, TAKAYUKI
APPLICANT: FRANKENBERG, NICOLE
APPLICANT: GAMBETTA, GREGORY
                                                                                                                                                                     APPLICANT: LAGARIAS, JOHN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRIOR APPLICATION NUMBER: PRIOR FILING DATE: 2001-05
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NUMBER OF SEQ ID NOS: 57
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TITLE OF INVENTION: LIGHT CONTROLLED GENE EXPRESSION UTILIZING HETEROLOGOUS PHYTOCHROFILE REFERENCE: 407T-907731US
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SOFTWARE: PatentIn version 3.0 EQ ID NO 10 LENGTH: 20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRIOR FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                               LENGTH: 20
TYPE: DNA
ORGANISM: Artificial
                                                                                                                                                                                                                                                                                                                                                                                                                                       OTHER INFORMATION: Primer
                                                                                                                                                                                                                                                                                                                                                                                                                                                         FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   OTHER INFORMATION: Primer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ORGANISM: Artificial
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                         ьосат
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1205 ATTTGCAGACTTTCCCATGG 1224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        OF SEQ ID NOS: 57
                                                                                                                                                                                                                                                                                                                          106 CGTTTGTCTCACTGAAACTG 125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                20 ATTTGCAGACTTTCCCATGG 1
                                                                                                                                                                                                                                                                                               1 CGTTTGTCTCACTGAAACTG 20
                                                                                                                                                                                                                                                                                                                                                            20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            20;
SEQ ID NOS:
                                                                                                                                                                                                                                                                                                                                                                        Similarity
                                                                                                                                     KOICHI, TAKAYUKI
FRANKENBERG, NICOLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Application US/10159901
No. US20030073235A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MONTGOMERY, BERONDA
                                                                                                                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2001-05-29
                                                                                                                                                                                                                                                                                                                                                      100.0%; F1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0.9%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            60/294,463
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             60/294,463
                                                                                                                                                                                                                                                                                                                                                                        Score 20;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 20;
                                                                                                                                                                                                                                                                                                                                                           Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          No
.
                                                                                                                                                                                                                                                                                                                                                                                     DB 9;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DB 9;
                                                                                                                                                                                                                                                                                                                                                                         6.4;
                                                                                                                                                                                                                                                                                                                                                       0;
                                                                                                                                                                                                                                                                                                                                                                                   Length 20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 20
                                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                       0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0;
                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                       0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       0,
```

```
RESULT 13
US-09-870-406A-15
                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                            δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ; OTHER INFORMATION: Primer US-09-870-406A-10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ; OTHER INFORMATION: Primer US-10-159-901-16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT 12
US-09-870-406A-10/c
                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local Similarity 100.0%; F
Matches 20; Conservative 0;
                                                                                                                                                                                                                                                                    Sequence 15, Application US/09870406A Publication No. US20030104379A1
                                                                                                                                                                                                                                                    GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQ ID NO 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SOFTWARE: PatentIn version SEQ ID NO 16
                                                                      APPLICANT: MONTGOMERY, BERONDA
TITLE OF INVENTION: HYZ FAMILY OF BILIN REDUCTASES
FILE REFERENCE: 407T-907720US
CURRENT APPLICATION NUMBER: US/09/870,406A
CURRENT FILING DATE: 2002-09-04
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence 10, Application US/09870406A Publication No. US20030104379A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CURRENT APPLICATION NUMBER: US/09/870,406A CURRENT FILING DATE: 2002-09-04 PRIOR APPLICATION NUMBER: 60/271,758 PRIOR FILING DATE: 2001-02-26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICANT: FRANKENBERG, NICOLE
APPLICANT: GAMBETTA, GREGORY
APPLICANT: MONTGOMERY, BERONDA
TITLE OF INVENTION: HYZ FAMILY OF BILIN REDUCTASES
FILE REFERENCE: 407T-907720US
                                  CURRENT FILING DATE: 2002-09-04
PRIOR APPLICATION NUMBER: 60/271,758
PRIOR FILING DATE: 2001-02-26
                                                                                                                                                                                                                APPLICANT: LAGARIAS, APPLICANT: KOICHI,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NUMBER OF SEQ ID NOS: 57
SOFTWARE: PatentIn version 3.0
                                                                                                                                                                           APPLICANT:
                                                                                                                                                                                              APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PRIOR APPLICATION NUMBER: 60/210,286 PRIOR FILING DATE: 2000-06-08
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT: LAGARIAS, JOHN APPLICANT: KOICHI, TAKAYU APPLICANT: FRANKENBERG, I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TYPE: DNA
ORGANISM: Artificial Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ORGANISM: Artificial
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ENGTH:
APPLICATION NUMBER: 60/210,286 FILING DATE: 2000-06-08
                                                                                                                                                                                                                                                                                                                                                                                                                            1205 ATTTGCAGACTTTCCCATGG 1224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2024 TCTGCATTTCAAGATGATTG 2043
                                                                                                                                                                                                                                                                                                                                                                                            20 ATTTGCAGACTTTCCCATGG 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 20 TCTGCATTTCAAGATGATTG 1
                                                                                                                                                                       KOICHI, TAKAYUKI
FRANKENBERG, NICOLE
GAMBETTA, GREGORY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   KOICHI, TAKAYUKI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                    JOHN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0.9%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 20;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Score 20; DB 9;
Pred. No. 6.4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DB 9;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length 20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
```

0;

NUMBER OF SEQ ID NOS: 57
SOFTWARE: PatentIn version 3.0
SEQ ID NO 15

```
RESULT 15
US-09-796-692-7575/c
US-09-796-692-7575, Application US/09796692
; Sequence 7575, Application US/09796692
; Publication No. US20020198362A1
; GENERAL INFORMATION:
   APPLICANT: Gaiger, Paul A.
   APPLICANT: Hagate, Paul A.
   APPLICANT: Mannion, Jane
   TITLE OF INVENTION: COMPOSITIONS AND METHODS FOR THE DETECTION, DIAGNOSIS AND THERAPY
   TITLE OF INVENTION: HEMATOLOGICAL MALIGNANCIES
; FILE REFERENCE: 2077.001200
   CURRENT APPLICATION NUMBER: US/09/796,692
; CURRENT FILING DATE: 2001-03-01
; PRIOR APPLICATION NUMBER: 60/186,126
; PRIOR APPLICATION NUMBER: 60/186,126
; PRIOR FILING DATE: 2000-03-01
                                                                                                                                                                                                                                                                                                                                                                                                                       В
                                                                                                                                                                                                                                                                                                                                                                                                                                                              Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ; OTHER INFORMATION: Primer US-09-870-406A-16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ; FEATURE:
; OTHER INFORMATION: Primer
US-09-870-406A-15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US-09-870-406A-16/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SOFTWARE: PatentIn version 3.0
SEQ ID NO 16
LENGTH: 20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence 16, Application US/09870406A Publication No. US20030104379A1 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match 0.9%; Score 20; Best Local Similarity 100.0%; Pred. No. Matches 20; Conservative 0; Mismatc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT: MONTGOMERY, BERONDA
TITLE OF INVENTION: HY2 FAMILY OF BILIN REDUCTASES
FILE REFERENCE: 4077-90720US
CURRENT APPLICATION NUMBER: US/09/870,406A
CURRENT FILING DATE: 2002-09-04
PRIOR APPLICATION NUMBER: 60/271,758
PRIOR FILING DATE: 2001-02-26
PRIOR APPLICATION NUMBER: 60/210,286
PRIOR APPLICATION NUMBER: 60/210,286
PRIOR FILING DATE: 2000-06-08
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NUMBER OF SEQ ID NOS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICANT: LAGARIAS, JOHN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ORGANISM: Artificial Sequence FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TYPE: DNA
ORGANISM: Artificial Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          y Match 0.9%; Score 20; DB Local Similarity 100.0%; Pred. No. 6., hes 20; Conservative 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                          2024 TCTGCATTTCAAGATGATTG 2043
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         106 CGTTTGTCTCACTGAAACTG 125
                                                                                                                                                                                                                                                                                                                                                                                                                       20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1 CGTTTGTCTCACTGAAACTG 20
                                                                                                                                                                                                                                                                                                                                                                                                                     TCTGCATTTCAAGATGATTG 1
CATION NUMBER: 60/190,479 IG DATE: 2000-03-17
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             KOICHI, TAKAYUKI
FRANKENBERG, NICOLE
GAMBETTA, GREGORY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DB 9;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DB 9;
6.4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length 20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0;
```

```
밁
                                    ρ
                                                                                                                                                      ; ORGANISM: Homo sapiens US-09-796-692-7575
                                                                                                                                                                                                            SOFTWARE: FastSEQ for Windows Version 3.0
SEQ ID NO 7575
LENGTH: 526
                                                                              Matches
                                                                                                              Query Match
                                                                            Best Local Similarity Matches 19; Conserv
                                                                                                                                                                                                                                                                                        PRIOR FILING DATE: 2000-08-04
PRIOR APPLICATION NUMBER: 60/223,378
PRIOR FILING DATE: 2000-08-07
                                                                                                                                                                                                                                                                        NUMBER OF SEQ ID NOS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRIOR APPLICATION NUMBER: 60/200,545 PRIOR FILING DATE: 2000-04-27
                                                                                                                                                                                                TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FILING DATE: 2000-04-28
APPLICATION NUMBER: 60/200,779
FILING DATE: 2000-04-28
                                      1300 GAAAAACATAAGGCTTTGT 1318
                                                                                                                                                                                                                                                                                                                                                APPLICATION NUMBER: 60/222,903 FILING DATE: 2000-08-03 APPLICATION NUMBER: 60/223,416
                                                                                                                                                                                                                                                                                                                                                                                                            FILING DATE: 2000-05-22
APPLICATION NUMBER: 60/218,950
FILING DATE: 2000-07-14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICATION NUMBER: 60/206, 201
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICATION NUMBER: 60/200,999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICATION NUMBER: 60/200,303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICATION NUMBER: 60/202,084 FILING DATE: 2000-05-04
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FILING DATE: 2000-05-03
Conservative
                                                                        0.9%; Score 19; DB
100.0%; Pred. No. 28
tive 0; Mismatches
                                                                                              DB 9;
28;
                                                                                                                Length 526;
                                                                            Indels
                                                                            0,
```

Search completed: June 24, 2003, 18:35:29 Job time: 221 secs

Gaps

0;

		. "		
		*		
4			$\alpha \theta$ ,	
e La				
	e			
į.				
)- ["				
••		*		
	*	100		
ie.		*		
				A
		24,		
	<b>A</b>			
	* **			
	•			
	· · · · · · · · · · · · · · · · · · ·			
		en en		
	* 4.5			
	7 m -			
				•
			*	
	***	·		
	×.			

```
Result
No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Run
                                                                                                                                                                                                                                                                                                                                                                                                          Database :
                                                                                                                                                                                                                                                                                                                                                                                                                                              Minimum DB
Maximum DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Word size
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   OM nucleic - nucleic search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                          Post-processing: Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence:
                                               C
                     იი
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   9
                                                                                                             Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                  Score
                                                                                                                                                                                                                                                                                                                                                                                                                                             seq length:
seq length:
                                                                  Query
Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             June 24, 2003, 15:13:05; Search time 2053 Seconds
(without alignments)
17039.577 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             16154066 seqs, 8097743376
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         OLIGO_NUC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     US-09-870-406A-32
2160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gapop 60.0 , Gapext 60.0
  18.3
14.3
12.2
5.1
1.6
1.6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         gaattccccacgtcaacgtg.....tcgtctctacctaatcaaca 2160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GenCore version 5.1.6 Copyright (c) 1993 - 2003 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                  em_estmu:*
em_estov:*
em_estpl:*
                                                                                                                                                   em_gss_other:*
em_gss_pro:*
em_gss_rod:*
                                                                                                                                                                                                                                                                                                                                                                              em_esthum:*
em_estin:*
                                                                                                                                                                                                                                                                                                                      gb_est1:*
                                                                                                                                                                                                                                              em_estom:*
gb_gss:*
                                                                                                                                                                                                                                                                                                    gb_est2:*
gb_htc:*
                                                                                                                                                                                                                                                                                                                                  em_htc:*
                                                                                                                                                                                                                                                                                                                                         em_estro:*
                                                                                                                                                                                                                                                                                                                                                                                                 em_estba:
                                                                                                                                                                               em_gss_mus:*
                                                                                                                                                                                        em_gss_mam:*
                                                                                                                                                                                                                           em_gss_hum:*
em_gss_inv:*
                                                                                                                                                                                                  em_gss_fun:*
                                                                                                                                                                                                                  em_gss_pln:*
                                                                                                                                                                                                                                                                 em_esttun:*
                                                                                                                                                                                                                                                                          gb_est5:*
                                                                                                                                                                                                                                                                                    gb_est4:*
                                                                                                                                                                                                                                                                                           gb_est3:*
                                                                   Length DB
                                                                                                                                                                                                                                                                                                                                                                                                                                              2000000000
                    396
309
417
111
  10
17
17
17
12
                            0 AV814470
7 CNS00NER
AI999062
                                                                   급
 AQ011370
BG544889
BH543454
                                                                                             SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          32308132
AV814470 AV814470
AL081825 Arabidops
AL081825 Arabidops
AL091862 701516996
AQ011370 F27D23TRC
BG544889 E2953 Chi
BH543454 BOGDJ52TR
                                                                 Description
                                                                           JOURNAL COMMENT
                                                                                                                                                                                                         ACCESSION
VERSION
                                                                                                                                                                                                                                                     RESULT 1
AV814470/c
                                                                                                                                          REFERENCE
                                                                                                                                                                                                 KEYWORDS
                                                                                                                                                                                                                                                                                                                                         a
                                                                                                                                                                                                                                                                                                                                                                                                0 0 0 0 0 0 0 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ဂဂ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        O
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           00000
                                                                                             TITLE
                                                                                                                                  AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                   36
38
39
41
42
```

20	20	20	20	20	20	20	20	20	20	20.	20	20	20	20	20	20	. 20	20	20	20	20	. 20	20	20	20	20	20	21	21	21	21	21	21	21	21	21	22	22
		٠	٠	٠		٠		٠	•	•	0.9	٠	•	•	•	•		•	•	•			•	•	•	•	•	•	•	•	٠			•	٠	•		
8	7	7	σ	9	σ	9	ω	N	Ν	N	619	0	9	9	8	σ	N	N	0	8	9	ū	N	5	5	4	7	N	$\vdash$	0	7	5	w	0	9	7	8	$\vdash$
12	12	10	13	17	14	17	13	13	13	13	13	13	17	13	13	12	13	17	17	10	10	13	9	10	13	13	9	17	17	17	13	17	10	10	10	10	17	17
BF639914	BG456328	AW448757	BI265525	AG056685	вQ139097	вн077934	BI265710 ·	вJ389891	вJ387395	вJ332878	BJ324742	вJ369820	AQ920305	BJ329755	вJ335911	BF434150	вл366249	AZ996415	BH023258	AW175064	BE104555	вл370625	AI181158	BE165978	вJ389702	BI023214	AV009075	CNS00YQ7	AQ479208	вн297378	вм489261	AZ721635	AV798190	AV802211	BE525184	AW576415	AZ420149	вн859442
914 NF027C0	328 NF077F1	757 BRY_	525 NF093C0	585	097	934	710	891	395	878	вJ324742 вJ324742	820	305	755	911	150	249	115	258	64	555	525	8	978 MR3	702 влз	214 CM4-	75 AV009075	493 Arabic	208 RPCI-11	378 CH230-4	261 pgm2n.p	535 RPC	190 AV798	211 AV802	184 M59E6	115 UI-HE	20149 1M019	H859442 X5_7111b

## ALIGNMENTS

SOURCE ORGANISM DEFINITION Plant Functional Genomics Research Group RIKEN Genomic Sciences Center 3-1-1 Koyadai, Tsukuba, Ibaraki 305-0074, Japan Tel: 81-298-36-4359 Fax: 81-298-56-9060 Large scale analysis of Arabidopsis full-length cDNA (2002b) Unpublished (2002) Contact: Motoaki Seki Arabidopsis thaliana
Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots;
Rosidae; eurosids II; Brassicales; Brassicaceae; Arabidopsis.
Rosidae; eurosids II; Brassicales; Brassicaceae; Arabidopsis.
1 (bases 1 to 396)
Seki, M., Narusaka, M., Ishida, J., Kamiya, A., Satou, M., Nakajima, M.,
Oono, Y., Sakurai, T., Carninci, P., Kawai, J., Itoh, M., Ishii, Y., Email: mseki@rtc.riken.go.jp An Arabidopsis full-length cDNA library was constructed essentially as reported previously (Seki et al., 1998). cDNA cleaved with BamHI mRNA sequence. AV814470 AV814470 Av8 and Shinozaki, K AV814470.1 Arakawa,T., Shibata,K., thale cress. GI:19856262 Shinagawa, A., Muramatsu, M., 396 bp mRNA linear EST 01-APR-2002 s thaliana cDNA clone RAFL09-83-B22 3', Hayashizaki,Y.

```
JOURNAL
REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                           RESULT 2
CNSOONER
                                                                                                                                              SOURCE
ORGANISM
                                                                                                                                                                             KEYWORDS
                                                                                   REFERENCE
                                                                                                                                                                                                                                                              DEFINITION
                                                                                                                                                                                              VERSION
                                                                                                                                                                                                               ACCESSION
                                                                                                                                                                                                                                                                               LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local Sin
Matches 396;
                                                                  AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           COUNT
                                                                                                                                                                                                                                                                                                                                                                                         2112
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1992
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1812
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        156
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     216
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    276
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                396
                                                                                                                                                                                                                                                                                                                                                            36
                                                                                                                                                                                                                                                                                                                                                                                                                           96
                                                                               Arabidopsis thaliana.
Arabidopsis thaliana
Arabidopsis thaliana
Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots;
Rosidae; eurosida, II; Brassicales; Brassicaceae; Arabidopsis.
Genoscope
                                                                                                                                                                                                                              CNSOONER 309 bp DNA linear GSS 28-JUN-1999 Arabidopsis thaliana genome survey sequence SP6 end of BAC F3L24 of IGF library from strain Columbia of Arabidopsis thaliana, genomic
                            Unpublished
                                             Samson, D.,
                                                         1 (bases 1 to 309)
Salanoubat, M., Choisne, N.,
                                                                                                                                                                                                                         survey sequence.
                                                                                                                                                                                                                                                                            CNS00NER
                                                                                                                                                                                            AL081825.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                and XhoI was ligated to modified Lambda FIC-1 vector (Carninci et al., submitted for publication) digested with BamHI and SalI. This clone is in a modified pBluescript vector. Please visit our web site (http://www.gsc.riken.go.jp/e/plant/index _e.html) for further details.
                                                                                                                                                                                                                                                                                                                                                                      AGTATGATATGATTTTAATGAAAATGTATTCGTCTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                 ACCATGCATTGTAGTTTTACAAGTGTAGCTCTCAGCCCTTCATCAAAATGAGAATCCTCG
                                                                                                                                                                                                                                                                                                                                                     AGTATGATATGATTTAATGAAAATGTATTCGTCTC 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ACAAGTCAGATTTCAGAGTCATCAACACAAGAGGACGTGAACTTAGGGAAGTAGGAATAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TATGAAACTCGTCCATGGGATTTAACAGGACAATTTATCGGCTAACAATGATATATGTGA 1931
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CCAGAGTACCAAACAGAAGATGGAACTGTAAGCGATAAACGAAGTATCATTGGGAAGTCA 1871
                                                                                                                                                                                                                                                                                                                                                                                                                ACAAGTCAGATTTCAGAGTCATCAACACAAGAGGACGTGAACTTAGGGAAGTAGGAATAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TATGAAACTCGTCCATGGGATTTAACAGGACAATTTATCGGCTAACAATGATATATGTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CCAGAGTACCAAACAGAAGATGGAACTGTAAGCGATAAACGAAGTATCATTGGGAAGTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (bases 1 to 309)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       111
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /dev_stage="plants at various developmental stages germination to mature seeds"
/lab_host="DH10B"
/note="fitc_1: BamHI; Site_2: SalI; subjected to dehydration (1, 2, 5, 10, 24 hr) and cold (1, 2, 5, hr) treatments"
a 89 c 63 g 133 t
                                            Saurin, W.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /organism="Arabidopsis
/db_xref="taxon:3702"
/clone="RAFL09-83-B22"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /clone_lib="RAFL9"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Location/Qualifiers
                                                                                                                                                                                          GI:5282965
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          18.3%;
                                     e,N., Artiguenave,F., Brottier Weissenbach,J. and Quetier,F.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 396; DB 10;
Pred. No. 7.1e-202;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 thaliana
                                                                                                                                                                                                                                                                                                                                                                                    2147
                                                  Brottier, P., Wincker, P.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               10,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1991
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      337
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               97
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0,
                                                                                   COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Вb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δã
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ω
```

밁 δÃ

Qy ДЪ Qy 밁 Ŋ 밁 Ωy Д Š В QΨ

Genome Systems, Inc., a wholly Pharmaceuticals, Inc. 4633 World Parkway Circle, St. Tel: 877-577-2733

owned subsidiary

Louis,

ŏ

63134, USF

314-427-3324

```
REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A1999062/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ZERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Locus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       BASE COUNT
ORIGIN
                                        TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local Sim
Matches 309;
                                                                                                                                                                                                                                                                         AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                         ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           301
                                                                                                                                               Chen, J., Momiyama, M., Chan, B., Mooney, M., Carroon, B., Gillila Wang, X., Hillman, J., Guegler, K., Kim, C., Doyle, M., Brzoska, P. Gorgone, G., Burns, D., Griffin, J., Mouanoutoua, M., Nguyen, D., Rose, M., Warren, B., Ton, B., Kastury, K., Borillo, C., Carpio, Doillow, T. Compiliation, Carpio, Ca
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             61
Policky, J., Suzuki, G., Argentine, C., Shah, S., Nobriga, A., Turner, C., Krikorian, S., Elder, L. and Hanson, D. Arabidopsis thaliana Gene Expression MicroArray Unpublished (1999)
Contact: David Smoller, Ph.D.
                                                                                                                                                                                                                                                                                                                  Arabidopsis thaliana
Eukaryota; Viridiplantae; Streptophyta; Embryophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eu
Rosidae; eurosids II; Brassicales; Brassicaceae; Arab
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              67
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AI999062

417 bp mRNA linear EST 08-Si 701516996 A. thaliana, Columbia Col-0, rosette-3 Arabidopsis thaliana cDNA clone 701516996, mRNA sequence.

AI999062
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TST
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AI999062.1 GI:5845967
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Direct Submission
Submitted (25-JUM-1999) Genoscope - Centre National de Sequencage :
BP 191 91006 EVRY cedex - FRANCE (E-mail : seqref@genoscope.cns.fr
- Web : www.genoscope.cns.fr)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ACCIGITCI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AATGGCTTTATCAATGGAGTTTGGGTTTTCAATTGGGTCATGCTTCAAGGCACCAAACCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CCCACGTCAACGTGACTGTGCATTCCACGTGGCGGATGTGGGCCCTATAGTTGGACCATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ACCTGTTCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AATGGCTTTATCAATGGAGTTTGGGGTTTTCAATTGGGTCATGCTTCAAGGCACCAAACCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AGAATTGAAGAGAGTGTCCGAGGAAGGAGACCTTTGGTTTCAGTTTGTGAGTCTTGTTGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AGAATTGAAGAGAGTGTCCGAGGAAGGAGACCTTTGGTTTCAGTTTGTGAGTCTTGTTGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (bases 1 to 417)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   73
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /organism="Arabidopsis t
/strain="Columbia"
/db_xref="taxon:3702"
/clone="F3L24"
/clone_1b="IGF"
/note="end: Sp6"
a 56 c 75 g 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score 309; I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               105
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       thaliana"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          .8e-155;
                                                                                                                                                                                                                                                     Carroon, B., Gilliland, D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 309;
                                                                                                                                                                                                                                                                                                                         Arabidopsis.
                                                                                                                                                                                                                      Brzoska, P.
                                                                                                                                                                                                                                                                                                                                                       eudicots;
                                                                                                                                                                                                                                                                                                                                                                               Tracheophyta;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EST 08-SEP-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                       Tan, R.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           66
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0,
```

```
RESULT 4
AQ011370/c
LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                       δÃ
                                                     REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                     Š
                                                                                                                                                                                                                                                                                                                                                                                                                         В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ş
                                                                                                                                           SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FEATURES
                                                                                                                                                                          KEYWORDS
                                                                                                                                                                                                                 ACCESSION
                                                                                                                                                                                                                                                  DEFINITION
                                                                                                                                                                                               VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches 384;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                        2101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1861
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1741. AGGAGCTGCTAAGGGATTTCCTGTTCAATGGGGTGGGTGAGTTAGGCACAAAAACATTCA 1800
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             324
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   384
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 204
                                                                                                                                                                                                                                                                                                                                                         25
                                                                                                                                                                                                                                                                                                                                                                                                                             85
                                                                                                                                                                                           sequence.
AQ011370
AQ011370.1
                                                                                                                                                                                                                                                  AQ011370
F27D23TRC
                                                                         Arabidopsis thaliana
Arabidopsis thaliana
Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots;
Rosidae; eurosids II; Brassicales; Brassicaceae; Arabidopsis.
                  1 (bases 1 to 111)
Rounsley,S.D., Suh,E.J., Wible,C., Golden,K., Shatsman,S., Choi,P., Yu,K., Akinretoye,B., Shen,K., Goonasekaram,S., Militscher,J., Adams,M.D. and Venter,J.C.
                                                                                                                                                            thale cress.
                                                                                                                                                                                                                                                                                                                                                                          GAGAATCCTCGAGTATGATATGATT 2125
                                                                                                                                                                                                                                                                                                                                                                                                                                                          TTGTTTGAGTTACCATGCATTGTAGTTTTACAAGTGTAGCTCTCAGCCCTTCATCAAAAT 2100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AGTAGGAATAAGAAAGAGCAGCATGAGGAGTCTCTCAGGGTCTATCTGCATTTCAAGATGA 2040
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GATATATGTGAACAAGTCAGATTTCAGAGTCATCAACAAGAGGACGTGAACTTAGGGA 1980
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TTGGGAAGTCATATGAAACTCGTCCATGGGATTTAACAGGACAATTTATCGGCTAACAAT 1920
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TTGATTACTTTCCAGAGTACCAAACAGAAGATGGAACTGTAAGCGATAAACGAAGTATCA 1860
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AGTAGGAATAAGAAAGAGCAGCATGAGGAGTCTCTCAGGTCTATCTGCATTTCAAGATGA 86
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TTGATTACTTTCCAGAGTACCAAACAGAAGATGGAACTGTAAGCGATAAACGAAGTATCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AGGAGCTGCTAAGGGATTTCCTGTTCAATGGGGTGGATGAGTTAGGCACAAAAACATTCA 325
                                                                                                                                                                                                                                                                                                                                                                                                                           TTGTTTGAGTTACCATGCATTGTAGTTTTACAAGTGTAGCTCTCAGCCCCTTCATCAAAAT 26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            112 a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /note-"vector: psport; Site_1: Not1; Site_2: Sal1; cDNA /note-"vector: psport; Site_1: Not1; Site_2: Sal1; cDNA /note-"vector: psport; Site_1: Not1; Site_2: Sal1; cDNA /note-"vector: vas derived from untreated rosette tissue from Arabidopsis thaliana, Columbia Col-0, at 4 - 7 weeks. Plants were grown in 1:1:1 peat moss/vermiculite/perlite soil at 22 deg. C +/- 3 deg. C under constant light, and watered with fertilizer. cDNA synthesis was initiated using a Not1-ollogo(dT) primer. Double stranded cDNA was blunted, ligated to Sal1 adaptors, digested with Not1, size-selected, and cloned into the Not1 and Sal1 sites of the psport vector."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /clone_lib="A. thaliana, Columbia Col-0, rosette-3"
/tissue_type="rosette"
/dev_stage="4 - 7 weeks"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Location/Qualifiers
1. .417
Sequence Database for Identifying Minimal Overlaps
                                                                                                                                                                                                                                                111 bp
IGF Arabidopsis thaliana
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /clone="701516996"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /db_xref="taxon:3702"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /cultivar="Columbia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /organism="Arabidopsis thaliana"
                                                                                                                                                                                               GI:3166615
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    12.2%;
99.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 264; DB 9;
Pred. No. 1.2e-130;
0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Col-0"
                                                                                                                                                                                                                                                genomic
                                                                                                                                                                                                                                                                   DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 417
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                linear GSS : clone F27D23,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1;
                                                                                                                                                                                                                                                               29-MAY-1998
                                                                                                                                                                                                                                                DNA
 in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          JOURNAL COMMENT
                                                                                                                                                                                                                                                                                                                                   REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RESULT 5
BG544889
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     δÃ
                                                                                                                       FEATURES
                                                                                                                                                                                                                                                                   COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  BASE COUNT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 rocus
                                                                                                                                                                                                                                                                                                                                                                                                                                                            KEYWORDS
                                                                                                                                                                                                                                                                                 TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Matches 111;
                                                                                                                                                                                                                                                                                                                                                                                                                         ORGANISM
                                                                                                     source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              source
                                                                                                                                                                                                                                                             Contact: Lim, C.O
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ass: BAC ends
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      þ
```

```
Brassica rapa subsp. pekinensis.
Brassica rapa subsp. pekinensis
Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots;
Spermatophyta; Magnoliophyta; eudicotyledons; Brassica.
Rosidae; eurosids II; Brassicales; Brassicaceae; Brassica.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 BG544889 404 bp mRNA linear EST 01-MAY E2953 Chinese cabbage etiolated seedling library Brassica rapa subsp. pekinensis cDNA clone E2953, mRNA sequence.
                                                                                                                                                                                                                 Gyeongsang National University
#900 Gazwa-dong, Jinju 660-701,
Tel: 82 55 751 6255
Fax: 82 55 759 9363
                                                                                                                                                                                                                                                                                                                                               1 (bases 1 to 404)
Ryu, S.H., Kang, J.S., Kang, C.-h., Kim, C.Y., Choi, Y.J.,
Bahk, J.D., Lee, S.Y., Cho, M.J. and Lim, C.O.
Expressed Sequence Tags of Chinese Cabbage Etiolated (Unpublished (2001)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          subsp. pekinensis cDNA (
BG544889
BG544889.1 GI:20375870
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                High quality sequence stop: 111.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Email: rounsley@tigr.org
Seq primer: M13 Reverse
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           9712 Medical Center Dr.,
Tel: 301 838 0200
Fax: 301 838 0208
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Department of Eukaryotic Genomics
The Institute for Genomic Research
9712 Medical Center Dr., Rockville,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Arabidopsis Genomic Sequencing. Update 4 Unpublished (1998)
Other_GSSs: F27D23TFC
                                                                                                                                                                                                                                                                                                          Plant Molecular Biology & Biotechnology
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Contact: Steve Rounsley
                                                                                                                                                                        Email: colim@nongae.gsnu.ac.
Seq primer: T7.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Produced by Thomas Altmann"

21 c 24 g 37 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /organism="Arabidopsis
/strain="Columbia"
/db_xref="taxon:3702"
/clone="F27D23"
                                                             /organism="Brassica rapa
/cultivar="Jangwon"
/db_xref="taxon:51351"
/clone_lib="Chinese cabbage etiolated
/tissue_type="Etiolated seedling"
                                                                                                                                                      Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /clone_lib="IGF"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            5.1%;
100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 111; DB 17;
Pred. No. 3.1e-48;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Mismatches
                                                                                                                                                                                                                                                                 Korea
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           thaliana"
                                                                                                           subsp.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MD 20850, USA
                                                                                                                                                                                                                                                                                                             Research Centre
                                                                                                           pekinensis'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 111;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Indels
                      seedling library"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EST 01-MAY-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       0
                                                                                                                                                                                                                                                                                                                                                                             Seedling cDNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
```

```
RESULT 7
BH859442/c
LOCUS
                                SOURCE
ORGANISM
                                                                                                                                                                                                           Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             REFERENCE
AUTHORS
TITLE
JOURNAL
                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                       ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                     VERSION
                                                                                  ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT 6
BH543454
LOCUS
                                                         KEYWORDS
                                                                                                         DEFINITION
                                                                                                                                                                                                                                                                                                      BASE COUNT
                                                                                                                                                                                                                                                                                                                                                                                                                    FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         BASE COUNT
                                                                                                                                                                                                                                                  Query Match
Best Local S
                                                                                                                                                                                                                                        Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                                                                                                                                                                                     source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   867 GGTTTCATGGAGCCCTGAGTATGATAC 892
                                                                                                                                                                                       102
                                                                                     BH859442
517 bp DNA linear GSS 08-J
55_7111b_t7 Mouse Retroviral Tagged Cancer Gene Database Mus musculus genomic clone X5_7111b, DNA sequence.
                                                                                 musculus genomic clone
BH859442
                             Mus musculus
                                                         GSS
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus
                                                                    вн859442.1
                                          house mouse.
                                                                                                                                                                                                                                                  Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Contact: Chris Town
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Whole genome shotgun sequencing of Brassica oleracea
Unpublished (2001)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Brassica oleracea
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      sequence.
BH543454
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             BOGDJ52TR BOGD Brassica
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        BH543454.1 GI:17795235
                                                                                                                                                                                   GGTTTCATGGAGCCTGAGTATGATAC 127
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                il: cdtown@tigr.org
is from a doubled haploid provided
                                                                                                                                                                                                                                                                                                                                                                                                                             primer: TR .
ss: sheared ends.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (bases 1 to 285)
                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               dae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Medical Center
301-838-3523
                                                                                                                                                                                                                                                                                                     71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                301-838-0208
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1.6%;
llarity 100.0%;
Conservative
                                                                                                                                                                                                                                                                                        /organism="Brassica oleracea"
/strain="TO1000DH3"
/db_xref="taxon:3712"
/db_xref="BOGDJ52"
/clone="BOGDJ52"
/clone_lib="BOGD"
/note="Vector: pHOS1; Site_1: BstXI; 2-3 kb sheared
genomic DNA inserted into pHOS1 using BstXI linkers"
a 50 c 58 g 106 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        þ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               eurosids
                                                                                                                                                                                                                                                                                                                                                                                                    Location/Qualifiers
1. .285
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /note="Vector: psport 1; Site_1: Sal I;
94 c 89 g 104 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /lab_host="XL-1 Blue"
                                                                  GI:21710263
                                                                                                                                                                                                                                                1.2%;
100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           II; Brassicales; Brassicaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Drive,
                                                                                                                                                                                                                                  Score 26; DB; Pred. No. 0.0; Mismatches
                                                                                                                                                                                                                                    0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Score 34;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             oleracea
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      285 bp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Rockville,
                                                                                                                                                                                                                                               DB 17;
0.028;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DB 12; 1
1.5e-06;
thes 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DNA linear GSS 14-DEC-2001 genomic clone BOGDJ52, DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ₹
                                                                                                                                                                                                                                   0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                    bу
                                                                                                                                                                                                                                                        Length 285;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    20850, USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 404;
                                                                                                                                                                                                                                                                                                                                                                                                                                                     Tom
                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Brassica.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Site_2:
                                                                                                                                                                                                                                0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0;
                                                                                                                08-JUL-2002
                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Not
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0;
                                                                                                                                                                                                                                                                                                                                             SOURCE
ORGANISM
                                     FEATURES
                                                                                                                                                                                                       COMMENT
                                                                                                                                                                                                                                                                                                                                                                                  ACCESSION
VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                RESULT 8
AZ420149
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              JOURNAL COMMENT
                                                                                                                                                                                                                                                                                                          REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                        DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       QY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FEATURES
                                                                                                                                                                                                                                                                                                                                                                      KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                     Locus
                                                                                                                                                                                                                  JOURNAL
                                                                                                                                                                                                                                           TITLE
                                                                                                                                                                                                                                                                                            AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TITLE
                        source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               source
```

```
Query Match
Best Local
                                                                                  Tel: 801 585 5606
Fax: 801 585 7177
Email: ddunn@genetics.utah.edu
Insert Length: 10000 Std Error: 0.
Plate: 0196 row: N column: 23
Seq primer: CACAGGAAACAGCTATGACC
Class: plasmid ends
                                                                                                                                                                                                                                                                                        ,M., Rose,M., Nouse, Mouse whole genome scaf/plasmid inserts
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    610 TAAAAGTTCAGATTTTGTTTTT 631
                                                                                                                                                                                                                                                                                                                                                                                                            Mus musculus
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus
                                                                  High quality sequence stop: 684
                                                                                                                                                                                                           84112,
                                                                                                                                                                                                                                         University of Utah
                                                                                                                                                                                                                                                         University of Utah
                                                                                                                                                                                                                                                                          Unpublished (2000)
Contact: Robert B.
                                                                                                                                                                                                                                                                                                                                                                                            Mammalia; Eutheria;
1 (bases 1 to 684)
Dunn, D., Aoyagi, A.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AZ420149 684 bp DNA 1M0196N23R Mouse 10kb plasmid UUGC1M 1: clone UUGC1M0196N23 R, DNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1 (bases 1 to 517)
Suzuki,T., Shen,H., Akagi,K., Morse,H.C., Malley,J.D., Naiman,D.Q., Jenkins,N.A. and Copeland,N.G.
Retroviral tagging provides a potent cancer gene discovery tool in
                                                                                                                                                                                                                                                                                                                                                      Dunn,D., Aoyagi,A., Barber,M., Beacorn,T., Du
Islam,H., Longacre,S., Mahmoud,M., Meenen,E.,
M., Rose,M., Rose,R., Stokes,R., Tingey,A.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AZ420149.1 GI:10544162
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Email: copeland@ncifcrf.gov
Class: PCR with specific primers.
Cocation/Qualifiers
1...517
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Contact: Copeland NG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 the post-genome-sequence era
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 National Cancer Institute
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Mouse Cancer Genetics Program
                                                                                                                                                                                                                           308,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            130
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g. 539, Rm. 229
: 301 846 1260
: 301 846 6666
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Conservative
                                                                                                                                                                                                           USA
                                                                                                                                                                                                                           Biomedical
/organism="Mus musculus"
/strain="C57BL/6J"
                                                Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /note="Inverse PCR method
(http://genome2.ncifcrf.gov/RTCGD)"
142 c 106 g 139 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /sex="female"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /organism="Mus musculus"
/db_xref="taxon:10090"
/clone="X5_7111b"
/clone_lib="Mouse Retroviral Tagged Cancer Gene Database"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /tissue_type="leukemia"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (2002) In press
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             229, Frederick, MD 21702-1201,
                                                                                                                                                                                                                                                         Genome
                                                                                                                                                                                                                                                                           Weiss
                                                                                                                                                                                                                                                                                                                          scaffolding
                                                                                                                                                                                                                      Polymers Research Bldg.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 22;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Mismatches
                                                                                                                                                                                                                                                         Center
                                                                                                                                                                                                                                                                                                                            with
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    4.6;
                                                                                                                                     0.00
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DB 17;
                                                                                                                                                                                                                                                                                                                          paired
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NA linear GSS 0:
library Mus musculus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length 517;
                                                                                                                                                                                                                                                                                                                                                                        Duval, B., Hamil, C.,
E., Pedersen, T., Reilly
                                                                                                                                                                                                                                                                                                                            end
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Indels
                                                                                                                                                                                                                      20 S.
                                                                                                                                                                                                                                                                                                                                                        von Niederhausern, A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               USA
                                                                                                                                                                                                                                                                                                                            reads
                                                                                                                                                                                                                      2030
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    0
                                                                                                                                                                                                                      Ξ.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Naiman, D.Q.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             03-OCT-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                genomic
                                                                                                                                                                                                                      SLC,
                                                                                                                                                                                                                      TD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0;
```

/sex="Male"

/clone-"UUGC1M0196N23"

/db\_xref="taxon:10090"

/clone\_lib="Mouse 10kb plasmid UUGC1M library"

```
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RESULT 9
AW576415/c
LOCUS
                                                                                                                                                             FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Matches
                                                                                                                                     source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                271 TGAGAAGGAGAAAGAAAGATT 292
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    351 TGAGAAGGAGAAAGAAAGATT 372
                                                                                                                                                                                                                      The sequence contained an oligo-dT track that was present in the oligonucleotide that was used to prime the synthesis of first strand cDNA and therefore this may represent a bonafide poly A tall. Tissue Procurement: Louis M. Staudt, M.D., Ph.D. cDNA Library Preparation: M.B. Soares Lab cDNA Library Arrayed by: M.B. Soares Lab DNA Sequencing by: M.B. Soares Lab Clone distribution: MGC clone distribution information can be found through the I.M.A.G.E. Consortium/LLNL at:

www-bio.llni.gov/bbp/image/image.html
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AW576415
UI-HF-BNO-alb-a-10-0-UI.sl NIH_MGC_50 Homo
IMAGE:3078834 3', mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NIH-MGC http://mgc.nci.nih.gov/.
National Institutes of Health, Mammalian Gene Collection (MGC)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EST
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Homo sapiens
                                                                                                                                                                                                              Seq primer: M13 Forward
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Email: cgapbs-r@mail.nih.gov
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Contact: Robert Strausberg, Ph.D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Unpublished (1999)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Mammalla; Eutheria; Primates; Catarrhini; Hominidae; 1 (bases 1 to 376)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                numan
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AW576415.1 GI:7247954
                                                                                                                                                                                      POLYA-Yes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          216
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               was hydrodynamically sheared by repeated passay through a 0.005 inch orifice at constant velocity. The sheared DNA was blunt end-repaired with T4 DNA polymerase and T4 polynucleotide kinase. Adaptor oligonucleotides were ligated to the blunt ends in high molar excess. The adaptored DNA was purified and size-selected for a 9.5 to 10.5 kb range using preparative agarose gel electrophoresis. Vector DNA was prepared from a derivative of pWD42 (gil4732114|gb|AF129072.1), a copy-number inducible derivative of plasmid R1. The vector was ligated with adaptors complementary to the insert adaptors and purified. The sheared, adaptored mouse DNA was annealed to adaptored vector DNA, and transformed into chemically-competent E. coli XL10-Gold (Stratagene) cells and selected for ampioillin resistance."
/organism="Homo sapiens"
/db_xref="taxon:9606"
/clone="IMAGE:3078834"
/clone_lib="NIH_MGC_50"
/tissue_type="lymph"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /lab_host="E. Coll strain XL10-Gold, T1-resistant, F-"
/note="Vector: PWD42nv; Purified genomic DNA from M.
musculus C57BL/6J (male) was obtained from the Jackson
Laboratory Mouse DNA Resource
(http://www.jax.org/resources/documents/dnares/). The DI
                                                                                                                                                           Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ი
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               142 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 22;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DB 17;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 684;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     linear
sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     15-MAR-2000
clone
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0
```

Q

밁

```
RESULT 10
BE525184/c
LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MEDLINE
                                                                                                                                                                                                                                                                                                                                                                                                    FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ACCESSION
VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Š
                                                                                                                                           ORIGIN
                                                                                                                                                             BASE COUNT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        BASE COUNT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             KEYWORDS
                                                             Matches
                                                                                                Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ORGANISM
                                                                             Local
1445 GAGGGAGGAGATGGAACCATC 1465
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  259 AATGGAGTTTGGGTTTTCAAT 279
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Contact: Benning, C
Dept. of Biochemistry & Molecular Biology
Michigan State University
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae; eurosids II; Brassicales; Brassicaceae; Arabidopsis.

1 (bases 1 to 392)

White,J.A., Todd,J., Newman,T., Focks,N., Girke,T., Martinez de Ilarduya,O., Jaworski,J.G., Ohlrogge,J. and Benning,C.
A new set of Arabidopsis expressed sequence tags from developing seeds. The metabolic pathway from carbohydrates to seed oil Plant Physiol. 124 (4), 1582-1594 (2000)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     M59E6STM Arabidopsis developing clone M59E6 5', mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Tel: 517 355 1609
Fax: 517 353 9334
                                                                                                                                                                                                                                                                                                                                                                                                                   Michigan State University DNA Sequencing Facility Arabidopsis Biological Resource Center, The Ohio State University, 309 Bo Zoology Bldg., 1735 Neil Avenue, Columbus, OH 43210 USA, FAX: 6142920603 TEL: 6142929371.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Arabidopsis thaliana
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                BE525184.1 GI:9783162
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         thale cress.
                                                                             Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Email: benning@msu.edu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            224 Biochemistry, Michigan State University,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AATGGAGTTTGGGTTTTCAAT 276
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            USA
                                                                                                                                                             105
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          135
                                                         1.0%;
llarity 100.0%;
Conservative (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                         /note="Organ: Developing seed; Vector: pBluescript SK;
Site_1: EcoRI; Site_2: XhoII"
118 c 34 g 135 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Constructed from size fractionated cytoplasmic mRNA (3.5-4.4kb). Directionally cloned. Cells provided by Louis M. Staudt, Ph.D. Library preparation by Maria de Fatima Bonaldo, Ph.D. and M. Bento Soares, Ph.D. ** 67 c 54 g 120 t
                                                                                                                                                                                                              /clone_lib="Arabidopsis developing seed"
/tissue_type="seed"
/dev_stage="5-13 days after flowering"
/lab_host="E.coli"
                                                                                                                                                                                                                                                                                                /db_xref="taxon:3702"
/clone="M59E6"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /lab_host="DH10B (LTI)"
/note="Vector: pT7T3-Pac; Site_1: NotI; Site_2: Eco
                                                                                                                                                                                                                                                                                                                                         /strain-"Columbia"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /cell_type="germinal center B cells'
/cell_line="MGC85"
                                                                                                                                                                                                                                                                                                                                                       organism="Arabidopsis thaliana"
                                                                                                                                                                                                                                                                                                                                                                                                ocation/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1.0%;
                                                           0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0
                                                                             Score 21; Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Score 21;
Pred. No.
                                                             Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              đđ
                                                                           DB 10; Length 392;
15;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         seed Arabidopsis thaliana
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DB 10; Length 376; 15;
                                                             .
0;
                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            East Lansing, MI 48824
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EST 19-MAR-2001
                                                           0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       0;
                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                        Botany &
                                                           0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0;
```

밁

```
RESULT 12
AV798190/c
                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                               Ş
                                                                                                                                                                                                                                                                                                                                                                                     ORIGIN
                                                                                                                                           DEFINITION
                                                                                                                                                               LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                     BASE COUNT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       KEYWORDS
                                                                         KEYWORDS
                                                                                            VERSION
                                                                                                           ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AV802211/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT
                                       ORGANISM
                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local (
                                                                                                                                                                                                                                                                                                                   Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             source
                                                                                                                                                                                                                                                                                                                                 Local
                                                                                                                                                                                                                                                                               1445 GAGGGAGGAGATGGAACCATC 1465
                                                                                                                                                                                                                                               234 GAGGGAGGAGATGGAACCATC
                                                                                       mRNA sequence.
AV798190
AV798190.1 GI:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Email: mseklertc.riken.go.jp
An Arabidopsis full-length cDNA library was constructed essentially
as reported previously (Seki et al., 1998). CDNA cleaved with BamHI
and XhoI was ligated to modified Lambda FLC-1 vector (Carninci et
al., submitted for publication) digested with BamHI and Sall. This
clone is in a modified pBluescript vector. Please visit our web
                                                                                                                                       AV798190 RAFL9 Arabidopsis thaliana
Eukaryota; Viridiplantae; Stre
Spermatophyta; Magnoliophyta;
                                     Arabidopsis thaliana
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             3-1-1 Koyadai, Tsukuba, Ibara
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Contact: Motoaki Seki
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Large scale analysis of Arabidopsis full-length cDNA (2002b) Unpublished (2002)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Seki,M., Narusaka,M., Ishida,J., Kamiya,A., Satou,M., Nakajima,M., Oono,Y., Sakurai,T., Carninci,P., Kawai,J., Itoh,M., Ishii,Y., Arakawa,T., Shibata,K., Shinagawa,A., Muramatsu,M., Hayashizaki,Y.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae; eurosids II; Brassicales; Brassicaceae; Arabidopsis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Arabidopsis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AV802211 RAFL9 Arabidopsis thaliana
                                                          thale cress.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               details.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AV802211.1 GI:19836196
                                                                                                                                                                                                                                                                                                                                 Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GAGGGAGGAGGATGGAACCATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (bases 1 to 407)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Shinozaki,.K.
                                                                                                                                                                                                                                                                                                                                                                                                     110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                81-298-36-9060
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  81-298-36-4359
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Functional Genomics Research Group
                                                                                                                                                                                                                                                                                                                                                                                                     Ø
                                                                                                                                                                                                                                                                                                                                                                                                                  /note="Site_1: BamHI; Site_2:
dehydration (1, 2, 5, 10, 24 hr) treatments"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      germination to mature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /organism="Arabidopsis thaliana"
/db_xref="taxon:3702"
/clone="RAFL09-31-B20"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /dev_stage="plants at various developmental stages
germination to mature seeds"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /lab_host="DH10B"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /clone_lib="RAFL9"
                                                                                         GI:19832173
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  thaliana
                                                                                                                                                                                                                                                                                                          1.0%; >---
100.0%; Pr
                                                                                                                                                                                                                                                                                                                                                                                                   124 c
                                                                                                                                                                                                                                                                                                                                Score 21;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                35 g
                                                                                                                                                                                                                                               214
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ibaraki 305-0074, Japan
                                                                                                                                                                                                                                                                                                                 Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         407
Streptophyta; Embryophyta; yta; eudicotyledons; core eu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ď
                                                                                                                                                                                                                                                                                                                                                                                                  138 t
                                                                                                                                                                                                                                                                                                                              DB
15;
                                                                                                                                                           mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             mRNA
                                                                                                                                                                                                                                                                                                                                                10;
                                                                                                                                       nRNA linear EST 29-MAR-2002 CDNA clone RAFL09-15-F01 3',
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           cDNA clone RAFL09-31-B20
                                                                                                                                                                                                                                                                                                                                                                                                                                    hr) and
                                                                                                                                                                                                                                                                                                                                                                                                                                  SalI; subjected 
hr) and cold (1,
                                                                                                                                                                                                                                                                                                               0;
                                                                                                                                                                                                                                                                                                                                                Length 407
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         linear
   eudicots;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EST 29-MAR-2002
                 Tracheophyta;
                                                                                                                                                                                                                                                                                                               0,
                                                                                                                                                                                                                                                                                                                                                                                                                                    2, to
                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                    տ
                                                                                                                                                                                                                                                                                                                                                                                                                                    10,
                                                                                                                                                                                                                                                                                                              0;
                                                                                                                                                                                                                                                                                                                                                                                                                                    24
```

```
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                     VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                        LOCUS
DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                         RESULT 13
AZ721635/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   REFERENCE
AUTHORS
                                                                                                                                             COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          COMMENT
                                                                                                                                                                                                                                                   REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FEATURES
                                                                                                                                                                                                                                                                                                                                                                        ACCESSION
                                                                                                                                                              TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TITLE
JOURNAL
                                                                                                                                                                                                                                 AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
Best Local 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1445 GAGGGAGGAGGAGGAACCATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              234 GAGGGAGGAGGATGGAACCATC 214
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Email: msekiertc.riken.go.jp
An Arabidopsis full-length cDNA library was constructed essentially as reported previously (seki et al., 1998). cDNA cleaved with BamHI and XhoI was ligated to modified Lambda FLC-1 vector (Carninci et al., submitted for publication) digested with BamHI and SalI. This clone is in a modified pBluescript vector. Please visit our web site (http://www.gsc.riken.go.jp/e/plant/index _e.html) for further
                                                                                                                                                                                                                                                                                                                                                    AZ721635
AZ721635.1
Clones are derived from the mouse BAC library RPCI-24. For library availability, please contact Pieter de Jong
                                                      Tel: 301 838 0200 Fax: 301 838 0208
                                                                                                         Department of Eukaryotic Genomics
The Institute for Genomic Researc
                                                                                                                                                                                                                          Zhao, S., Nierman, W., Malek, J.,
                                                                                                                                                                                                                                                                                                                                                                                                        AZ721635
RPCI-24-73A18.TV
                                                                                         9712 Medical Center Dr.,
                                                                                                                                            Contact: Shaying Zhao
                                                                                                                                                                                             Tsegaye,G., Geer,K., Krol,M., Shvartsbeyn,A.,
Russell,D., de Jong,P. and Fraser,C.M.
                                                                                                                                                                                                                                                                Eukaryota; Metazoa; Chordata; Craniata; Vertebrata;
Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae;
                                                                                                                                                                                                                                                                                                      Mus musculus
                                                                                                                                                                                                                                                                                                                                       GSS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      3-1-1 Koyadai, Tsukuba, Ibaraki 305-0074,
Tel: 81-298-36-4359
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Large scale analysis of Arabidopsis full-length Unpublished (2002)
                                      Email: szhao@tigr.org
                                                                                                                                                          Unpublished (1999)
                                                                                                                                                                          Russell,D., de Jong,P. and Fraser,C.!
Mouse BAC End Sequences from Library
                                                                                                                                                                                                                                                                                                                     house mouse
                                                                                                                                                                                                                                                                                                                                                                                          DNA sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Fax: 81-298-36-9060
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RIKEN Genomic Sciences Center
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Contact: Motoaki Seki
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              and Shinozaki, K
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Arakawa, T., Shibata, K., Shinagawa, A., Muramatsu, M., Hayashizaki, Y.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Rosidae; eurosids II; Brassicales; Brassicaceae; Arabidopsis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Similarity
                                                                                                                                                                                                                                                 (bases 1 to 457)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (bases 1 to 437
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1.0%;
llarity 100.0%;
Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Functional Genomics Research Group
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sakurai, T.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /dev_stage="plants at various
germination to mature seeds"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Narusaka, M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /organism="Arabidopsis
/db_xref="taxon:3702"
/clone="RAFL09-15-F01"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /note="Site_1: BamHI; Site_2:
dehydration (1, 2, 5, 10, 24 |
hr) treatments"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /clone_lib="RAFL9"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       'lab_host="DH10B"
                                                                                                                                                                                                                                                                                                                                                       GI:12464522
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 .437
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       132 c
                                                                                                                                                                                                                                                                                                                                                                                                        RPCI-24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               , Ishida, J., Kamiya, A., Carninci, P., Kawai, J.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 21;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     43 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1465
                                                                                                                                                                                                                                                                                                                                                                                                       457
Mus
                                                                                         Research Rockville,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                mismatches
                                                                                                                                                                                                                                                                                                                                                                                                        musculus
                                                                                                                                                                                                                                                                                                                                                                                                                       þp
                                                                                                                                                                                                                                 Shatsman, S.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       153 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              thaliana"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    15;
                                                                                                                                                                                                                                                                                                                                                                                                                           DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    10;
                                                                                         ₹
                                                                                                                                                                                                                                                                                                                                                                                                     genomic clone
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      : SalI; subjected
hr) and cold (1,
                                                                                         20850,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       developmental stages
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length 437;
                                                                                                                                                                                                                                                                                                                                                                                                                         linear
                                                                                                                                                                                                                                 Akinret, B.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Itoh, M., Ishii, Y.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Satou, M., Nakajima, M.,
                                                                                          USA
                                                                                                                                                                                                             Gebregeorgis, E.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            cDNA (2002b)
                                                                                                                                                                                                                                                                                  Euteleostomi;
                                                                                                                                                                                                                                                                                                                                                                                                        GSS 24-JAN-2001
RPCI-24-73A18,
                                                                                                                                                                                                                                                                    Murinae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2 t
                                                                                                                                                                                                                               Levins, M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        5
                    BAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             from
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        10,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        24
```

В δÃ

```
RESULT 14
BM489261
                                                                                                                                                                                                                                                                                                                                                                                                       JOURNAL COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                           FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
Best Local
                                                                                                                                                                                                                                                          source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      613 AAGTTCAGATTTTGTTTTCT 633
                                                                                                                                                                                                                                                                                                                                                                                                                                                           Cogburn, L.A. and Monsonego-Ornan, E. ESTs from Normalized Chicken Breast Muscle, Leg Muscle, Epiphyseal Growth Plate cDNA library, USDA/IFAFS Animal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  BM489261 472 bp mRNA linear EST 07-FEB-
pgm2n.pk010.g14 Normalized Chicken Breast Muscle, Leg Muscle, an
Epiphyseal Growth Plate cDNA library (pgm2n) Gallus gallus cDNA
clone pgm2n.pk010.g14 5' similar to no significant hits (pLog(P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Archosauria; Aves; Neognathae; Galliformes; Phasianidae; Phasianinae; Gallus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (pdejong@mail.cho.org). Clones may be purchased from BACPAC Resources (http://www.chori.org/bacpac/orderingframe.htm). BAC page: http://www.tigr.org/tdb/bac_ends/mouse/bac_end_intro.html Plate: 73 row: A column: 18
                                                                                                                                                                                                                                                                                                                                                                             Contact: Larry A. Cogburn
University of Delaware
                                                                                                                                                                                                                                                                                                                                                                                                                        Unpublished (2002)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gallus gallus
                                                                                                                                                                                                                                                                                                                                          Tel
                                                                                                                                                                                                                                                                                                                                                              Townsend Hall,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              BM489261.1 GI:18610192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   4), mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Class: BAC ends
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Seq primer: T7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (bases 1 to 472)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     172
                                                                                                                                                                                                                                                                                                                  302-831-1335
302-831-2822
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                         cogburn@udel.edu, www
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     a
                                                                                  /clone="pgm2n.pk010.g14"
/clone_lib="Normalized Chicken Breast Muscle, Le
and Epiphyseal Growth Plate cDNA library (pgm2n)
/sex="Male and Female"
                                                                                                                                                                   /strain="Commercial broiler and Strains 90 & 21" /db_xref="taxon:9031"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /cell_type="Spleen/Brain"
/cell_type="Spleen/Brain"
/note="Vector: pTARBAC1; Site_1: BamH1; Site_2: BamH1;
/note="Vector: pTARBAC1; Site_1: BamH1; Site_2: BamH1;
/note="Vector ptarbac1; Site_1: BamH1; Site_2: BamH1;
/note="Vector ptarbac1; Site_2: BamH1; Site_2: BamH1; Sites using MboI partially digested male C57BL/6J
                                         growth plate"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /db_xref="taxon:10090"
/clone="RPCI-24-73A18"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Location/Qualifiers
1. .457
                                                               /tissue_type="Breast muscle,
                                                                                                                                                                                                                                /organism="Gallus gallus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /organism="Mus musculus"
/strain="C57BL/6J"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /sex="Male"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /clone_lib="RPCI-24"
'dev_stage="Breast,leg:Embryo(d19);post-hatch(1d,1,3,5,7,9
11 weeks);growth plate(1d,7d,14d post-hatch)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1.00.0%; Pr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     81 c
                                                                                                                                                                                                                                                                                                                                                            Newark, DE 19717,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 21;
; Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   77 g
                                                                                                                                                                                                                                                                                               www.chickest.udel.edu.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     127 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DB
16;
                                                                                                                                                                                                                                                                                                                                                            USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      17;
                                                            leg muscle and epiphyseal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 457;
                                                                                                                                                                                                            Ottawa
                                                                                                                                                                                                            Res.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EST 07-FEB-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0;
                                                                                                              Leg Muscle,
                                                                                                                                                                                                                                                                                                                                                                                                                                                             Genome
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      BAC end
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0
```

В δÃ

LOCUS

```
REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT 15
BH297378/c
BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                            FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       BASE COUNT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Locus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local S
Matches 21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TITLE
JOURNAL
                                                                                                                                                                                                                                                        source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2116 TGATATGATTTTAATGAAAAT 2136
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              288 TGATATGATTTTAATGAAAAT 308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         BH297378
CH230-45E12.TV CHORI-230 Segment 1 Rattus norvegicus CH230-45E12, DNA sequence.
                                                                                                                                                                                                                                                                                                                                Clones are derived from the rat BAC library CHORI-230 (http://www.chori.org/bacpac/rat230.htm). For BAC library availability, please contact Pieter de Jong (pdejong@mail.cho.or Clones may be purchased from BACPAC Resources (http://www.chori.org/bacpac/or ering_information.htm). BAC end page: http://www.tigr.org/tdb/bac_ends/rat/bac_end_intro.html plate: 45 row: E column: 12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Contact: Shaying Zhao
Department of Eukaryotic Genomics
The Institute for Genomic Research
9712 Medical Center Dr., Rockville,
Tel: 301 838 0200
Fax: 301 838 0208
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Jong,P. and Fraser,C.M.
Rat BAC End Sequences from Library CHORI-230 ECORI segment Unpublished (1999)
Other_GSSs: CH230-45E12.TJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   вн297378
вн297378.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Similarity
21; Conser
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Zhao,S., Shetty,J., Shatsman,S., Tsegaye,G., Geer,K., Shvartsbeyn
,A., Gebregeorgis,E., Overton,L., Russell,D., Chen,D., Riggs,F.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Rattus norvegicus
                                                                                                                                                                                                                                                                                               Class: BAC ends.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Norway rat.
                                                                                                                                                                                                                                                                                                                   Seg primer: T7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Email: szhao@tigr.org
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (bases 1 to 607)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         140
                        139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       þ
                     þ
          /cell_type="Brain"
/note="Vector: pTARBAC2.1; Site_1: EcoRI; Site_2: EcoRI;
/note="Vector: pTARBAC2.1; Site_1: EcoRI;
CHORI-330 Rat (BN/SSNHSd/MCW) BAC library produced by
Pieter de Jong"
133 c 153 g 182 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /lab_host="E. coli EMDH10B"
/note="Vector: pcMvSpORT6; Library made from equivalent pools of total RNA isolated from each tissue (embryonic muscle 33.3%; juvenile muscle 33.3%; and epiphyseal growth plate 33.3% of the final RNA pool). Single pass sequencing from 5'-end"
                                                                                                                                                                                    /organism="Rattus norvegicus"
/strain="BN/SsNHsd/MCW"
/db_xref="taxon:10116"
                                                                                                                                                                                                                                                        1. .607
                                                                                                                           /sex="Female"
                                                                                                                                            /clone="CH230-45E12"
/clone_lib="CHORI-230 Segment 1"
                                                                                                                                                                                                                                                                         location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         65
c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 21;
Pred. No
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  87 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         171 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         13;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MD 20850, USA
                                                                                                                                                                                                                                                                                                                                                                                                                        de Jong (pdejong@mail.cho.org).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 472;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         9 others
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GSS 30-NOV-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              genomic clone
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             de
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0
```

Query Match Matches

Best Local Similarity

Conservative

0;

Mismatches

Indels

0;

Gaps

0;

100.0%;

Score 21; Pred. No.

DB 17;

Length 607;

```
Title:
Perfect score:
Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Minimum
Maximum
                                                                                                                                                                                                                                                                                                                                Result
No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Database :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Word size :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   OM protein - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Post-processing: Listing first 45 summaries
      Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DB DB
                                                                                                                                                                                                                                                                                                                                Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 seq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 length: 0
length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                             PIR_73:*
1: pir1:*
2: pir2:*
3: pir3:*
4: pir4:*
                                                                                                                                                                                                                                                                                                                              Query
Match Length DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               OLIGO Gapop 60.0 , Gapext 60.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      June 24, 2003, 18:53:41 ; Search time 17 Seconds (without alignments) 1860.484 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-09-870-406A-33
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            283224 seqs, 96134422 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MALSMEFGFSIGSCFKAPNP......SIIGKSYETRPWDLTGQFIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GenCore version 5.1.6
Copyright (c) 1993 - 2003 Compugen Ltd.
               T34691
C70478
AC1476
AE1431
D69825
C82497
T70125
G95825
G95828
T06053
A70584
QQBEN2
                                                                                                                                                                                                 A46118
F90486
C86390
C866406
S668406
T44411
G70616
D71111
S45632
VCTNS
C70909
    NBMS
AD2242
T34133
                                                                                                                                                                                                                                                                                                                                IJ
                                                                                                                                                                                                                                                                                                                                                               SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   283224
ankyrin repeat proposable membrane hypothetical proteinase IV - Aq B. subtilis Spoili B. subtilis Spoili B. subtilis Spoili Glucose 1-dehydrog ribose ABC transpo probable agmatinas probable agmatinas probable athylene-probable will abc transporobable ubiquitin phosphate transpor gene 33 protein - The apolipoprotein The apolipoprotein The apolipoprotein to test the steroid/thyroid/re
                                                                                                                                                                                              hypothetical prote
hypothetical prote
H+-transporting tw
coat protein - tob
probable two-compo
                                                                                                                                                                                                                                                             myosin-binding pro
dehydrogenase, pro
hypothetical prote
88.6K hypothetical
DNL4 protein - yea
                                                                                                                                                                                                                                                    ribosomal protein
                                                                                                                                                                                                                                                                                                                              Description
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               329
```

Ş

272 KELLRDFL 279

Query Matc Best Local Matches	RESULT 2 F90486 Gehydrogenase, probable [imported] - Sidehydrogenase, probable [imported] - Signeties: Sulfolobus solfataricus C;Species: Sulfolobus solfataricus C;Accession: F90486 R;She, O:; Singh, R.K.; Confalonieri, Jong, I:; Jeffries, A.C.; Kozera, C.J Jong, I:; Jeffries, A.C.; Kozera, C.J arrett, R.A.; Ragan, M.A.; Sensen, C.W submitted to GenBank, April 2001 A;Description: Sulfolobus solfataricus A;Reference number: A99139 A;Accession: F90486 A;Status: preliminary A;Molecule type: DNA A;Cross-references: GB:AE006641; NID:g:C;GenetLos: A;GenetLos:	Query Match Best Local Matches  Qy  42  Db 141	RESULT 1 A46118 A46118 myosin-binding protein H - human C;Species: Homo sapiens (man) C;Date: 21-Sep-1993 #sequence_revision 18-Nov-1994 #text_c C;Accession: A46118 R;Vaughan, K.T.; Weber, F.E.; Ried, T.; Ward, D.C.; Reinacl Genomics 16, 34-40, 1993 A;Title: Human myosin-binding protein H (MyBP-H): complete A;Reference number: A46118; MUID:93252409; PMID:8486381 A;Rocession: A46118 A;Status: preliminary A;Motecule type: nucleic acid A;Residues: 1-476 <vau> A;Cross references: GB:L05606; NID:9292336; PIDN:AAA36339. A;Cross references: GB:L05606; NID:9292336; PIDN:AAA36339. A;Note: sequence extracted from NCBI backbone (NCBIN:13120)</vau>		30 30 30 30 30 30 30 30 30 30 30 30 30 3
h Simi 8;	r 2  cogenase, probable [imprices: Sulfolobus solfatte: 24-May-2001 #sequences: 24-May-2001 #sequences: 24-May-2001 #sequences: 24-May-2001 #sequences: A.C.; R; Seffries, A.C.; R; Ragan, M.A.; Stred to GenBank, Aprill tred to GenBank, Aprill tred to GenBank, Aprill strence number: A99139 assion: F90486 cus: preliminary acule type: DNA idues: 1-371 <kur> screferences: GB:AE006 stics: SSO3049</kur>	5 9 9 1	binding protein H - hu es: Homo sapiens (man) 21-Sep-193 #sequence sion: A46118 aan, K.T.; Weber, F.E.; s 16, 34-40, 1993 :: Human myosin-binding ence number: A46118; M sion: A46118 s: preliminary ule type: nucleic acid ues: 1-476 <vau> -references: GB:L05606 imental source: striat sequence extracted fr</vau>		777777777777777777777777777777777777777
imilarity ; Conservat	robable [1 lobus solf 001 #seque 486 , R.K.; Co ies, A.C.; gan, M.A.; gan, M.A.; gan, M.A.; 1 square Lifolobus er: A99139 486 Lifolobus er: A99139 1 square Lifolobus er: A99139	VS Pr	ng protein H - human omo sapiens (man) ep-193 #sequence_revision A46118 T; Webles 34-40, 1993 an myosin-binding protein number: A46118; MUID:93252 A46118 eliminary rppe: nucleic acid 1-476 <vau> rences: GB:L05606; NID:929 al source: striated muscle ence extracted from NCBI b</vau>		
2.4 100. ive	bble [imported] us solfataricus #sequence_revis K.; Confalonier A.C.; Kozera, M.A.; Sensen, M.A.; Sensen, Appil 2001 lobus solfatari Ap9139 TUR> URP GB:AE006641; NI	2. 100 /ative 50 149	in H - human ens (man) #sequence_revision er, F.E.; Ried, T. 1993 n-binding protein A46118; MUID:93252 y y leic acid AB:L05606; NID:929 e: striated muscle racted from NCBI b		362 371 371 387 387 389 399 408 433 465 465 467
000	pported] itaricus ice_revi ice_revi ifalonie Kozera, Sensen, 2001 colfatar	7%; ).0%;	_revis Ried, Prote JID:93		0000000000000000
Sco Pr 0;		Score 9; Pred. No 0; Mismat	n 18 evision 18 iled, T.; W rotein H ( D:93252409 NID:93252409	ALIG	T19031 D119031 D84186 H86203 T20604 B69321 S76830 F69488 D95384 D95384 D95384 D95384 D95384 D95384 D95384 D95384 D95384 D95384 D95384
re 8; DB ed. No. 4. Mismatches	Sulfolobus solfan 24-May-2001 #t F:; Zivanovic, J:; Medina, N.; W.; Van der Oost s complete genon g13816451; PIDN:	9; DB No. 0 matches	n 18-NOV-1994 '; Ward, D.C. H (MyBP-H): 2409; PMID:84 92336; PIDN:A e backbone (NCB	ALIGNMENTS	
ຶດນ	H > 0 O	ຶ່ງນ	1994 D.C.; D.B.48 ID:848		
Len 0;		Len 0;	v-1994 #text_ch , D.C.; Reinach P-H): complete MID:8486381  pIDN:AAA36339.1 e (NCBIN:131208		
Length 0; Inc	AR · Jen xt ar	Length 0; Inc	text_cha Reinach, mplete p 381		
th 371; Indels	<pre>#text_change 24-May-2 #text_change 24-May-2 c, Y.; Allard, G.; Awa .; Peng, X.; Thi-Ngoc, OSt, J. nome. bN:AAK43149.1; GSPDB:G</pre>	th 476; Indels	han h, pr		hypot dTP-t hypot hypot phosi hypot cell hypot coen: uncha proto GABA gamma hypot glutt
	ge 2 ; rd, ; rh		<b>8</b> 5 8 6		hypothetical GTP-binding grap-binding grap-binding graphypothetical hypothetical phosphoglyces hypothetical cell division hypothetical coenzyme f399 uncharacterical coentaracterical protein [improtein [improtein and a recept gramma-aminob hypothetical glutamate sylprobable glutamate sylprobable glutamate
0;	24-May- G.; Aw hi-Ngoc	0;	10		etic etic etic etic ogly etic ivi: ivi: ivi: ivi: ivi: ivi: ivi: iv
Gaps	ау-2001 Амауег Эос, Н.	Gaps	ge 28-May-1999 F.C.; Fischman, imary sequence, imary sequence, PID:9292337 NCBIP:131209)		hypothetical projection of the project of the proje
J.	-May-2001 :; Awayez, -Ngoc, H.P.	CO.	999 man, nce,		as or i to you or e or to
0;	υ <u>*</u> *	0;	D.A		
	.J.; Ch Redder		D.A. genomic		
	ñ <del>b</del>				

```
C;Accession: C86406
R;Theologis, A.; Ecker, J.R.; Palm, C.J.; Federspiel, N.A.; Creasy, T.H.; Dewar, N.C.; Chin, C.W.; Chung, M.K.; Conn, L.; Conway, A.B.; Conway, A.R.; Creasy, T.H.; Dewar, N.C.; Chin, C.W.; Chung, M.K.; Huizar, L.
Nature 408, 816-820, 2000
A;Authors: Hunter, J.L.; Jenkins, J.; Johnson-Hopson, C.; Khan, S.; Khaykin, E.; Kim, C., A; Lutros: Hunter, J.L.; Jenkins, J.; Johnson-Hopson, C.; Khan, S.; Khaykin, E.; Kim, C., A; Turos, J.S.; Maiti, R.; Marziali, Rizzo, M.; Rooney, T.; Rowley, D.; Sakano, H.
Rizzo, M.; Rooney, T.; Rowley, D.; Sakano, H.
A;Authors: Salzberg, S.L.; Schwartz, J.R.; Shinn, P.; Southwick, A.M.; Sun, H.; Tallon, Rizzo, M.; Wu, D.; Yu, G.; Fraser, C.M.; Venter, J.C.; Davis, R.W.
A;Tille: Sequence and analysis of chromosome 1 of the plant Arabidopsis.
                                             밁
                                                                               δÃ
                                                                                                                                                                                                                 A; Map position: 1
                                                                                                                                                                                                                                                                              A; Molecule type: DNA
A; Residues: 1-786 <STO>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             C86406
88.6K hypothetical protein F13K9.16 - Arabidopsis thaliana
C;Species: Arabidopsis thaliana (mouse-ear cress)
C;Date: 02-Mar_2001 #sequence_revision 02-Mar-2001 #text_change 02-Nov-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         C;Date: 02-Mar 2001 #sequence_revision 02-Mar 2001 #text_change 31-Dec-2001 C;Accession: C86390
R;Theologis, A; Ecker, J.R.; Palm, C.J.; Federspiel, N.A.; Kaul, S.; White, O Chin, C.W.; Chung, M.K.; Conn, L.; Conway, A.B.; Conway, A.R.; Creasy, T.H.; Chin, C.W.; Chung, M.K.; Conn, L.; Conway, A.B.; Conway, A.R.; Creasy, T.H.; Nature 408, 816-820, 2000
A;Authors: Hunter, J.L.; Jenkins, J.; Johnson-Hopson, C.; Khan, S.; Khaykin, E. C.A.; Li, J.H.; Li, X.; Liu, S.X.; Liu, Z.A.; Luros, J.S.; Maiti, R.; Rizzo, M.; Rooney, T.; Rowley, D.; Sakano, H.; R.; Shinn, P.; Southwick, A.M.; Sun, H. A;Authors: Salzberg, S.L.; Schwartz, J.R.; Shinn, P.; Southwick, A.M.; Sun, H. A;Title: Sequence and analysis of chromosome 1 of the plant Arabidopsis. A;Accession: C86390
A;Status: preliminary
                                                                                                                                                                                                                                                            A; Cross-references:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    뫄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A; Cross-references: GB: AE005172;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A; Map position: 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A; Molecule type: DNA A; Residues: 1-491 <STO>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             hypothetical protein T1K7.26 - Arabidopsis thaliana C;Species: Arabidopsis thaliana (mouse-ear cress)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                               Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Local
                                           448
                                                                                    267
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    290
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        274 LLRDFLFN 281
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     318
                                      GEAKAKEL 455
                                                                                    GEAKAKEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Similarity
8; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LLRDFLFN 297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   KELLRDFL 325
                                                                                                                             Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                        GB:AE005172;
                                                                                                                                             2.4%;
100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2.4%;
                                                                                                                          0;
                                                                                                                                             Score 8;
Pred. No.
                                                                                                                                                                                                                                            NID:g11024878; PIDN:AAG26962.1; GSPDB:GN00141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NID: g9797761; PIDN: AAF98579:1; GSPDB: GN00141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score
Pred.
                                                                                                                          Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     . No.
                                                                                                                                          DB 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               . б;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2;
                                                                                                                      0,
                                                                                                                                                               Length 786
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 491
                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0;
                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Khaykin, E.;
Maiti, R.; M
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Η.;
                                                                                                                 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Dewar,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Marziali
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ; Alonso,
ewar, K.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Tallon,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Kim,
                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                     QΥ
A; Experimental source: strain C-125
                                        A;Molecule type: DNA
A;Residues: 1-120 <TAK>
                                                                                                                                                                                                                                                                                                            T44411
                    A;Cross-references: EMBL:AB017508;
```

RESULT 5

Nakasone, K.; Takaki, Y.; Maeno, G.; Sasaki, Res. 28, 4317-4331, 2000

NID:g4512395; PIDN:BAA75299.1; PID:g4512432

R .

Masui, N.; Fuji,

A N

```
A, racasami, H.; Takaki, Y.; Nakasone, K.; Hirama, C.; Inoue, A.; Horikoshi, K. Biosci. Biotechnol. Biochem. 63, 452-455, 1999
A, Title: Sequence analysis of a 32-kb region including the major ribosomal protein A, Reference number: Z22756; MUID:99209008; PMID:10192928
A, Accession: T44411
A, Stratus.
                                                                                                                            C;Species: Bacillus halodurans
C;Date: 31-Jan-2000 #sequence_revision 31-Jan-2000
C;Accession: T44411; C83670
R;Takami, H.; Takaki, Y.; Nakasone, K.; Hirama, C.;
A; Status: preliminary; translated from GB/EMBL/DDBJ
                                                                                                                                                                                                                    ribosomal protein L17 rplQ [imported] - Bacillus halodurans (strain C-125)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A;Cross-references: SGD:S0005531; MIPS:YOR005c A;Map position: 15R
                                                                                                                                                                                                                                                                                        RESULT 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A;Cross-references: EMBL:U43491;
A;Note: the nucleotide sequence v
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A;Residues: 493-944 <STW>
A;Cross-references: EMBL:U43491; NID:g1150992;
A;Note: the nucleotide sequence was submitted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         R;Sterky, F.; Holmberg, A.; Petterson, B.; Uhlen, M. Yeast 12, 1091-1095, 1996
A;Title: The sequence of a 30 kb fragment on the left arm A;Reference number: S72130; MUID:97051599; PMID:8896276
A;Accession: S72137
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        C;Species: Saccharomyces cerevisiae
C;Date: 12-Uul-1996 #sequence_revision 12-Uul-1996 #text_change 29-Oct-1999
C;Accession: S66870; S61988; S61989; S72137; S72138
R;Fettersson, B.; Sterky, F.; Uhlen, M.
submitted to the Protein Sequence Database, July 1996
A;Reference number: S66682
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A; Gene: SGD: DNL4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A; Residues:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A; Molecule type: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A;Status: nucleic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A; Molecule type: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A; Accession: S72138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A; Molecule type: DNA
A; Residues: 1-407 <STA>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A;Cross-references: EMBL:274913; NID:g1420095; PIDN:CAA99193.1; A;Experimental source: strain S288C R;Sterky, F; Uhlen, M.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A; Molecule type: DNA
A; Residues: 1-944 <PET>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A;Cross-references: EMBL:U43491; NID:g1150992; PIDN:AAC49485.1; PID:g1151001 R;Sterky, F.; Holmberg, A.; Pettersson, B.; Uhlen, M.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A;Cross-references: EMBL:U43491; NID:g1150992; PIDN:AAC49484.1; PID:g1151000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A; Reference number: S61981
A; Accession: S61988
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     submitted to the EMBL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DNL4 protein - yeast (Saccharomyces cerevisiae)
N;Alternate names: protein 02525; protein UND407; protein UNE452; protein YOR005c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A; Accession: S61989
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A;Residues:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A; Molecule type:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A; Accession:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Status: nucleic acid sequence not shown; translation not shown
                                                                                                                                                                                                                                                                                                                                                                                                               186
                                                                                                                                                                                                                                                                                                                                                              296 GESIKFFS 303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1-407 <STF>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       493-944 <STE>
                                                                                                                                                                                                                                                                                                                                                                                          GESIKFFS
                                                                                                                                                                                                                                                                                                                                                                                                                                                        Similarity 100.0%;
8; Conservative 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      S66870
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        acid sequence not shown; translation not shown
                                                                                                                                                                                                                                                                                                                                                                                                            193
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Data Library, December 1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2.4%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                was submitted to
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 8;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                        Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DB 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ; PIDN:AAC49484.1; PID:g1151000 to the EMBL Data Library, Dece
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PIDN:AAC49485.1; PID:g1151001 to the EMBL Data Library, December
                                                                                                                                                                        #text_change 15-Jun-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                      0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 944;
                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Data Library,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  of chromosome
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PID:e252317; PID:g142
                                                                                                                                                                                                                                                                                                                                                                                                                                                   ç,
                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            December
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ۲
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  from
                                                                                                                                                                                                                                                                                                                                                                                                                                                0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1995
                                                                      ge
```

```
RESULT
D71111
                                                                                                                                                                                                                                                                              C;Species: Pyrococcus horikoshii
C;Date: 14-Aug-1998 #sequence_revision 14-Aug-1998 #text_change 05-Nov-1999
C;Accession: D71111
                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Rajandream, M.A.; Rogers, J.; Rutter, S.; Seeger, K.; Skelton, S Nature 393, 537-544, 1998
A;Authors: Sqares, R.; Sulston, J.E.; Taylor, K.; Whitehead, S.; A;Title: Deciphering the biology of Mycobacterium tuberculosis fi A;Reference number: A70500; MUID:98295987; PMID:9634230
A;Accession: G70616
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             R;Cole, S.T.; Brosch, R.; Parkhill, J.; Garnier, T.; Churcher, C.; Harris, D.; Connor, R.; Davies, R.; Deviln, K.; Feltwell, T.; Gentles, S.; Hamlin, N.; Hornandream, M.A.; Rogers, J.; Rutter, S.; Seeger, K.; Skelton, S.; Squares, S.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A; Gene: rpiQ
C; Superfamily:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A; Title: Complete genome A; Reference number: A8365
                                                         A;Cross-references: GB:AP000003; NID:g3236130; PIDN:BAA29750.1; PID:d1030693; PID:g32570A;Experimental source: strain OT3
A;Note: this accession replaces an interim accession for a sequence replaced by GenBank
                                                                                                               A; Residues: 1-158 < KAW>
                                                                                                                            A; Molecule type:
                                                                                                                                                                 A; Reference number: A71000; A; Accession: D71111
                                                                                                                                                                                                   R:Kawarabayasi, Y.; Sawada, M.;
M.; Ohfuku, Y.; Funahashi, T.;
DNA Res. 5, 55-76, 1998
A;Title: Complete sequence and g
                                                                                                                                                                                                                                                                                                                                    hypothetical protein PH0659 - Pyrococcus horikoshii
                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A; Cross-references: GB: Z92770;
A; Experimental source: strain |
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A; Molecule type: DNA
A; Residues: 1-126 <COL>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A;Status: preliminary; nucleic acid sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      hypothetical protein Rv0140 - Mycobacterium tuberculosis (strain H37RV) C:Species: Mycobacterium tuberculosis C:Species: Mycobacterium tuberculosis C:Date: 17-Ju1-1998 #sequence_revision 17-Ju1-1998 #text_change 22-Oct-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A;Cross-references: GB:AP001507; GB:BA000004; A;Experimental source: strain C-125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A; Molecule type: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A; Accession:
A; Status: pre
                                                                                                                                               A; Status: preliminary; nucleic acid sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A; Residues: 1-120 <STO>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Accession: G70616
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Genetics
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            34
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Similarity
7; Conser
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Similarity
7; Conser
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            EAKAKEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           EAKAKEL 274
                                                                                                                                                                                                                                                                                                                                                                                                                                                                RIVLEPS 71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Escherichia
                                                                                                                                DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       enome sequence of the alkaliphilic bacterium Bacillus halodurans A83650; MUID:20512582; PMID:11058132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    coli ribosomal protein
                                                                                                                                                                                and gene organization of the genome of a MUID:98344137; PMID:9679194
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ; GB:AL123456; NID:g3261720;
H37RV
                                                                                                                                                                                                                                        Horikawa, H.; Haikawa, Tanaka, T.; Kudoh, Y.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score 7; u
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ç
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 7; |
Pred. No.
                                                       interim accession
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DB
20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DB 2;
3. 19;
                                                                                                                                             not shown;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       not shown;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NID: g10172612;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     <sub>.</sub>د
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    L17
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length 126
                                                       for a sequence
                                                                                                                                                                                                                                        Yamazaki,
                                                                                                                                                                                                                                                           Y.; Hino,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                               translation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       translation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PIDN:CAB07046.1; PID:e306646;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PIDN:BAB03882.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           from the comple
                                                                                                                                                                                                                                        J.;
                                                                                                                                                                                                                                                         Y.; Yamamoto,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0,
                                                     replaced
                                                                                                                                               not shown
                                                                                                                                                                                                   hyper-thermophilic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       not
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                        Kushida,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           complete
                                                     by GenBank
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Holroyd,
                                                                                                                                                                                                                                        Z
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GSPDB:GNO
                                                                                                                                                                                                                                                           S:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gordon,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           genome
                                                                                                                                                                                                                                        Oguch
                                                                                                                                                                                                                                                             Sekin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         and
               RESULT 10
VCTNS
                                                                                          밁
                                                                                                                          Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δÃ
coat protein
```

```
A; No. lecule type: protein
A; Molecule type: protein
A; Residues: 23-72;112-121;141-160 <GI2>
A; Residues: C; Gentles, S;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Eur. J. Biochem. 222, 851-859, 1794
A;Title: ATP synthase of yeast mitochondria. Isolation of the A:Paference number: S45632; MUID:94298825; PMID:8026496
                                                                                                                                                                     C;Superfamily: H+-transporting ATP synthase epsilon chain C;Keywords: ATP biosynthesis; hydrolase; membrane-associated complex; mitochondrial i F;1-22/Domain: transit peptide (mitochondrion) #status predicted <TNP> F;23-160/Product: H+-transporting ATP synthase epsilon chain #status predicted <MAT>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         R;Andre, B.; Vissers, S.; Urrestarazu, L. submitted to the EMBL Data Library, February 1995 A;Description: The sequence of a 42 kb segment located
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   R;Murphy, L.; Richards, C.; Gentles, S.; Has
submitted to the EMBL Data Library, January
A;Reference number: S50976
                                                                                                                                                                                                                                                                                                              A;Cross-references: MIPS:YDL004w; SGD:S0002162
A;Map position: 4L
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A;Cross-references: EMBL:Z48432; NID:g683669; PIDN:CAA88355.1; R;Urrestarazu, L.A.; Andre, B.; Vissers, S. submitted to the Protein Sequence Database, July 1996 A;Reference number: S67535
A;Accession: S67536
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A; Description: The sequence A; Reference number: $52492 A; Accession: $52515
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A; Molecule type: DNA
A; Residues: 1-160 <MUR>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A; Reference number: A; Accession: S50978
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A; Molecule type: DNA
A; Residues: 1-160 <GIR>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    C;Date: 03-May-1994 #sequence_revision 27-Jan-1995 #text_change 03-Jun-2002
C;Accession: S45632; S47658; S50978; S52515; S67536; S39208
                                                                                                                                                                                                                                                                    A; Note: YDL004w
                                                                                                                                                                                                                                                                                         A;Genome: nuclear
                                                                                                                                                                                                                                                                                                                                                             A; Gene: SGD: ATP16; ATP14
                                                                                                                                                                                                                                                                                                                                                                                                    A;Cross-references: EMBL:Z74052; NID:g1430960; PIDN:CAA98560.1; A;Experimental source: strain S288C
                                                                                                                                                                                                                                                                                                                                                                                                                                              A; Molecule type: DNA
A; Residues: 1-160 < URR>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A; Molecule type: DNA
A; Residues: 1-160 < AND>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A;Cross-references: EMBL:Z48008; NID:g642799; PIDN:CAA88057.1; PID:g642802
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A; Accession: S47658
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A;Cross-references: EMBL:Z21857; NID:g433619; PIDN:CAA79912.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A; Accession: S45632
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   R; Giraud, M.F.; Velours,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     H+-transporting two-sector ATPase (EC 3.6.3.14) epsilon chain precursor - N; Alternate names: protein D2935; protein YD8119.03; protein YDL004w
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Species: Saccharomyces cerevisiae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
Best Local
                                                                                      Matches
                                                                                                                                Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Matches
                                                                                                        Local
                                         309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      210 ALFSAFL 216
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            66 ALFSAFL 72
ω
                                                                                   Similarity 7; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Similarity
                                         RSIIGKS 315
                                                                                   2.1%;
llarity 100.0%;
Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2.1%;
                                                                                   0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    0
                                                                                                                                Score 7;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 7;
Pred. No.
                                                                                                             Pred.
                                                                                   Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Harris,
ary 1995
                                                                                                             ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DB 2;
                                                                                                                                DB 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    U
                                                                                   0;
                                                                                                                             Length 160;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 158;
                                                                                   Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  F(1)-delta subunit,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PID:g683693
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PID:g433620
                                                                                                                                                                                                                                                                                                                                                                                                                           PID:g1430961; MIPS:YD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0
                                                                                   0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              arm of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                chromosome
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            yeast
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0
                                                                                   0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (Sacc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       seq
```

tobacco necrosis satellite virus

```
A; Experimental:
C; Genetics:
A; Note: A607R
                                                                                                                                                                                                                                                                                           RESULT 12
T18109
                                                                                                                                                                                                                              ankyrin repeat protein A607R - Chlorella virus PBCV-1
C;Species: Chlorella virus PBCV-1
C;Date: 15-Oct-1999 #sequence_revision 15-Oct-1999 #text_change 15-Oct-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A;Cross references: GB:297182; GB:AL123456; NID:g3250720; A;Experimental source: strain H37Rv C;Genetics:
                                                                                                    A; Molecule type: DNA
A; Residues: 1-229 <GRA>
                                                                                                                              A; Status: preliminary; translated from GB/EMBL/DDBJ
                                                                                                                                                                     A; Reference number: Z18806
                                                                                                                                                                                      R;Graves, M.V.; Van Etten, submitted to the EMBL Data
                                                                                      A; Cross-references:
                                                                                                                                                     A; Accession: T18109
                                                                                                                                                                                                                       C; Accession:
                                                                                                                                                                                                                                                                                                                                                           В
                                                                                                                                                                                                                                                                                                                                                                                   Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 11
C70909
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A;Status: preliminary; nucleic acid sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A; Authors: Sqares, R.; Sulston, J.E.; Taylor, K.; Whitehead, S.; Barrell, B.G. A; Title: Deciphering the biology of Mycobacterium tuberculosis from the comple A; Reference number: A70500; MUID:98295987; PMID:9634230
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             R;Cole, S.T.; Brosch, R.; Parkhill, J.; Garnier, T.; Churcher, C.; Harris, Connor, R.; Davies, R.; Devlin, K.; Feltwell, T.; Gentles, S.; Hamlin, N. Rajandream, M.A.; Rogers, J.; Rutter, S.; Seeger, K.; Skelton, S.; Squares
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               probable two-component sensor - Mycobacterium tuberculosis (strain H37RV)
C:Species: Mycobacterium tuberculosis
C:Date: 17-Jul-1998 #sequence_revision 17-Jul-1998 #text_change 22-Oct-1999
C:Accession: C70909
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A;Cross-references: GB:JCC;Superfamily: satelliteC;Keywords: coat protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      C;Species: tobacco
C;Date: 31-Mar-1981
C;Accession: A04217
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A; Molecule type:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A; Reference number: A70500;
A; Accession: C70909
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Rajandream, M.A.; Rogers, J.; Rutter, Nature 393, 537-544, 1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A;Title: Total nucleotide sequence of a nearly full-size DNA A;Reference number: A04217; MUID:81170584; PMID:6260960 A;Accession: A04217
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            R;Ysebaert, M.;
J. Mol. Biol. 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A; Molecule type: genomic RNA
A; Residues: 1-196 <YSE>
      Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                          Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Mol. Biol. 143,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Rv0600c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  38: tobacco necrosis satellite virus
31-Mar-1981 #sequence_revision 31-Mar-1981 #text_change
                                                                                                                                                                                                                                                                                                                                                                                         57
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          184 LTGESIK 190
                                                                                                                                                                                                                       T18109
                                                                                                                                                                                                                                                                                                                                                                                                                                        Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Similarity 7; Conserv
                                                                                                                                                                                                                                                                                                                                                         SALEETR
                                                                                                                                                                                                                                                                                                                                                                                       SALEETR 63
                                                                     source:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LTGESIK 144
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      van
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DNA
                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2.1%;
ilarity 100.0%;
Conservative (
                                                                  EMBL:U42580;
ce: specific |
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      n Emmelo, J.; 273-287, 1980
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GB:J02399; NID:g335254; PIDN:AAA69583.1; llite tobacco necrosis virus coat protein
                                                                                                                                                                                                                                                                                                                                                                                                                                    2.1%;
100.0%;
                                                                                                                                                                                  Library,
   18;
                                                                   host
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Fiers,
                                                              NID:g4028896; PIDN:AAC96943.1
                                                                                                                                                                                                                                                                                                                                                                                                                                  Score 7; I; Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                      0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       0;
   Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 7;
Pred. No.
                                                                                                                                                                                    Мау
                                                                                                                                                                                                                                                                                                                                                                                                                    Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Mismatches
 7;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DB 1;
 DВ
                                                                                                                                                                                                                                                                                                                                                                                                                                    . 31
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   not shown;
2,
                                                                                                                                                                                                                                                                                                                                                                                                                                      Ç 2;
Length 229
                                                                                                                                                                                                                                                                                                                                                                                                                   0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length 207;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 196
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    0;
                                                                                                                                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   translation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PIDN:CAB09983.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PID: 9335255
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 сору
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   23-Jul-1999
                                                                                                                                                                                                                                                                                                                                                                                                                 0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                of satellite tobacco
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Squares,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   not shown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                the complete
                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  z
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                D.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PID:e1192556
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  S
                                                                                                                                                                                                                                                                                                                                                                                                                 0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Holroyd,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gordon,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                genome
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ໝ
                                                                                                                                              밁
                                                                                                                                                                          Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                뫄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ş
```

1

Young, W.G.; Lenox,

A.L.; Graham,

D.E.;

```
C;Species: Aquifex aeolicus
C;Date: 08-May-1998 #sequence_revision 08-May-1998 #text_change 08-Oct-1999
C;Accession: C70478
                                                                                                                                          RESULT 15
C70478
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RESULT 14
T34691
                                                                                                              proteinase
                                                                                                                                                                                                                                                                                                                                                                                                                                                         A; Gene: SCOEDB
C; Superfamily:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A; Molecule type: DNA
A; Residues: 1-262 <HAR>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       R; Harris, D.; Taylor, K.; Parkhill, submitted to the EMBL Data Library,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             C;Species: Streptomyces coelicolor
C;Date: 05-Nov-1999 #sequence_revision 05-Nov-1999 #text_change 21-Jan-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    il, M.; Rutherford, K.; Simmonds, M.; Skelton, J.;
Nature 413, 523-527, 2001
A;Title: Genome sequence of Yersinia monti-
A;Reference numbers.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      C;Accession: AIO267
C;Accession: AIO267
R;Parkhill, J.; Wren, B.W.; Thomson, N.R.; Titball, R.W.; Holden, M.T.G.; Prentice, R;Parkhill, J.; Wren, B.W.; Thomson, N.R.; Titball, R.W.; Holden, M.T.G.; Prentice, R:Parkhill, J.; Whitehead, S.; Barre
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RESULT 13
AI0267
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A; Experimental
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A; Cross-references:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A;Status:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A; Accession: T34691
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A; Reference number:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               C; Accession: T34691
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       hypothetical protein SC1B5.13c SC1B5.13c - Streptomyces coelicolor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A;Reference number: AB0001; MUID:21470413; PAA;Accession: A10267
A;Status: PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PRO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     C; Superfamily: yciC protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A; Gene:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A;Cross-references: GB:AL590842; PIDN:CAC91005.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  C; Species: Yersinia
C; Date: 02-Nov-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A; Molecule type: DNA
A; Residues: 1-256 < KUR>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         probable membrane
                                                                                                                                                                                                                                                                                                                                                         Matches
                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Genetics:
Gene: SCOEDB:SC1B5.13c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ;Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Best Loc
Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   YP02199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             preliminary; translated from GB/EMBL/DDBJ
                                                                                                                                                                                                                                                   121
                                                                                                                                                                                                                                                                                                 309 RSIIGKS
                                                                                                                 - VI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       272
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                43
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Similarity
7; Conserve
                                                                                                                                                                                                                                                                                                                                                      7;
                                                                                                                                                                                                                                                                                                                                                                               Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Similarity
7; Conserv
                                                                                                                                                                                                                                                   RSIIGKS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LLRVSAV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LLRVSAV 49
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 KELLRDF 278
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       source: strain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        KELLRDF
                                                                                                                                                                                                                                                                                                                                                                                                                                                         erythrocyte
                                                                                                           Aquifex aeolicus
                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 protein YPO2199 [imported] -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                EMBL: AL023517; PIDN: CAA18987.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Z21553
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           pestis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               #sequence_revision 02-Nov-2001
                                                                                                                                                                                                                                                   127
                                                                                                                                                                                                                                                                                                 315
     P.V.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           87
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     22
                                                                                                                                                                                                                                                                                                                                                                            2.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                 band 7 integral membrane protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Library,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2.1%;
  Gaasterland,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A3(2)
                                                                                                                                                                                                                                                                                                                                                   0;
                                                                                                                                                                                                                                                                                                                                                Score 7; DB 2
Pred. No. 39;
0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 7;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       J.;
Мау
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Barrell, B.G.;
1998
T.;
                                                                                                                                                                                                                                                                                                                                                                            DB 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              s, the causative agent of plague. PMID:11586360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DB
38;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  34;
                                                                                                                                                                                                                                                                                                                                                                                                        2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Yersinia pestis (strain CO92)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PID:g15980199; GSPDB:GN00175
                                                                                                                                                                                                                                                                                                                                                   0;
                                                                                                                                                                                                                                                                                                                                                                                                  Length 262;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               #text_change 09-Nov-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GSPDB:GN00070;
                                                                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Rajandream,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                256
                                                                                                                                                                                                                                                                                                                                                .
.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SCOEDB: SC1B5.13c
                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                              0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      tice, M
ugan, G
Barrel
```

```
V.

Nature 392, 353-358, 1998
A;Title: The complete genome of the hyperthermophilic bacterium Aquifex aeolicus.
A;Reference number: A70300; MUID:98196666; PMID:9537320
A;Reference number: A70300; MUID:98196666; PMID:9537320
A;Reference number: A70300; MUID:98196666; PMID:9537320
A;Reference number: A70300; MUID:98196666; PMID:9537320
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: Lag sequence not shown; translation not shown
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: Lag sequence not shown; translation not shown
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number: DMA
A;Reference number
```



```
Result
No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Database :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Post-processing: Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Minimum DB
Maximum DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Word size :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Perfect score:
Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Title:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          OM protein -
        Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            seq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               length:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query
Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-09-870-406A-33
329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         June 24, 2003, 18:50:11; Search time 16 Seconds (without alignments) 852.857 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              112892 seqs, 41476328 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gapop 60.0 , Gapext 60.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            OLIGO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SwissProt_40:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MALSMEFGFSIGSCFKAPNP......SIIGKSYETRPWDLTGQFIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GenCore version 5.1.6 Copyright (c) 1993 - 2003 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DВ
ATPD_YEAST
COAT_STIVA]
MTBC_METBA
MBC1_METAC
MBC2_METMA
MBC2_METMA
MBC2_METMA
MBC2_METMA
MBC2_METMA
MBC1_METMA
MBC1_METMA
MBC1_METMA
MBC2_METMA
ISPG_THEMA
ISPG_THEMA
ISPG_THEMA
ISPG_THEMA
ISPG_THEMA
ISPG_THEMA
ISPG_THEMA
ISPG_THEMA
ISPG_THMA
INOUSE
GAR1_RAT
DLDH_PSEFL
FOJO_DROW
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_METMA
ISPG_ME
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MYPH_HUMAN
DNL4_YEAST
MTBC_METTE
RL17_BACHD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          112892
                     029685 archaeoglob
P28476 homo sapien
P56476 mus musculu
P47742 rattus norv
P24046 homo sapien
P56475 mus musculu
P50572 rattus norv
P14218 pseudomonas
P54360 drosophila
P27306 drosophila
P27307 ascharomyc
Q13387 homo sapien
                                                                                                                                                                                                                                                                                                                              Q08387 saccharomyc Q09ga3 methanosarc Q09ga3 methanosarc Saccharomyc Q12165 saccharomyc Q12165 saccharomyc Q08tb0 methanosarc Q8tb0 methanosarc Q8ts71 methanosarc P58979 methanosarc Q8ts71 methanosarc Q05940 rhizobium e Q07575 bacillus su Q06344 mycobacteri Q01022 herpesvirus Q9wzz3 thermotoga Q01339 mus musculu Q76828 caenorhabdi Q91594 pseudomonas
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Q13203 homo sapien
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Description
musculu
```

<b>.4</b>	4.4	43	42	41	40	39	38	37	36	35	34
σ	o o	6	<u>ი</u>	6	σ	σ	0	σ	σ	7	7
	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	2.1	2.1
117	117	114	84	82	81	76	64	62	57	1350	941
- P	-	1	H	_	_	_	<b>—</b>	۳,	دسو	<b>ب</b>	
RL20_CAMJE	CHH3_PENJP	Y941_ARCFU	DHSD_CHOCR	YFDX_PLEBO	EX7S_PASMU	CD24_MOUSE	RK35_CYACA	V452_BPR69	YE56_ARCFU	VG72_HSVI1	CHRD_XENLA
Q9p1q0 campylobact	094676 penaeus jap	029321 archaeoglob	P54323 chondrus cr	P46043 plectonema	Q9cnaO pasteurella	P24807 mus musculu	Q9tlr9 cyanidium c	064300 bacteriopha	028816 archaeoglob	Q00103 ictalurid h	Q91713 xenopus lae

## ALIGNMENTS

SEQUENCE FROM N.A. TISSUE-Skeletal muscle; MEDLINE-93252409; PubMed-8486381;	RA Vaughan K.T., Weber F.E., Ried T., Ward D.C., Reinach F.C., RA Fischman D.A.; RT "Human myosin-binding protein H (MyBP-H): complete primary sequence, RT "Human myosin-binding protein H (MyBP-H): complete primary sequence, RT genomic organization, and chromosomal localization."; RT genomic organization, and chromosomal localization."; RR genomics 16:34-40(1993). RN [2] RR SEQUENCE FROM N.A. RA Whittle M.R., Fischman D.A., Reinach F.C.; RL SUBMITTERACTION: BINDS TO MYOSIN, PROBABLY INVOLVED IN INTERACTION WITH CC -1- FUNCTION: BINDS TO MYOSIN, PROBABLY INVOLVED IN INTERACTION WITH CC -1- FUNCTION: BINDS TO MYOSIN, PROBABLY INVOLVED IN INTERACTION WITH CC -1- FUNCTION: BINDS TO THE IMMUNOGLOBULIN SUPERFAMILY. MYBP CC -1- SIMILARITY: CONTAINS 2 IMMUNOGLOBULIN-LIKE C2-TYPE DOMAINS. CC -1- SIMILARITY: CONTAINS 2 FIBRONECTIN TYPE III-LIKE DOMAINS. CC -1- SIMILARITY: CONTAINS 2 FIBRONECTIN TYPE III-LIKE DOMAINS. CC -1- SIMILARITY: CONTAINS 2 FIBRONECTIN TYPE III-LIKE DOMAINS. CC -1- SIMILARITY: CONTAINS 2 FIBRONECTIN TYPE III-LIKE DOMAINS. CC -1- SIMILARITY: CONTAINS 2 FIBRONECTIN TYPE III-LIKE DOMAINS. CC -1- SIMILARITY: CONTAINS 2 FIBRONECTIN TYPE III-LIKE DOMAINS. CC -1- SIMILARITY: CONTAINS 2 FIBRONECTIN TYPE III-LIKE DOMAINS. CC -1- SIMILARITY: CONTAINS 2 FIBRONECTIN TYPE III-LIKE DOMAINS. CC -1- SIMILARITY: CONTAINS 2 FIBRONECTIN TYPE III-LIKE DOMAINS. CC -1- SIMILARITY: STATEMENT 2 FIBRONECTIN TYPE III-LIKE DOMAINS. CC -1- SIMILARITY: CONTAINS 2 FIBRONECTIN TYPE III-LIKE DOMAINS. CC -1- SIMILARITY: CONTAINS 3 LONG AND AND AND AND AND AND AND AND AND AND
SEQUENCE FROM N.A.	SUBFAMILY.  SUBFAMILY.  -!- SIMILARITY: CONTAINS 2 IMMUNOGLOBULIN-LIKE C2!- SIMILARITY: CONTAINS 2 FIBFONECTIN TYPE III-LII  This SWISS-PROT entry is copyright. It is produced between the Swiss Institute of Bioinformatics and the European Bioinformatics Institute. There are use by non-profit institutions as long as its emodified and this statement is not removed. Usage entitles requires a license agreement (See http://or send an email to license@isb-sib.ch).
SUBMITTED (MAY-1995) to the EMBL/GenBank/DDBJ databases.  SUBMITTED (MAY-1995) to the EMBL/GenBank/DDBJ databases.  -!- FUNCTION: BINDS TO MYOSIN; PROBABLY INVOLVED IN INTERACTION.  THICK MYOFILAMENTS IN THE A-BAND.  -!- TISSUE SPECIFICITY: SKELETAL MUSCLE.  -!- SIMILARITY: BELONGS TO THE IMMUNOGLOBULIN SUPERFAMILY.	This SWISS-PROT entry is copyright. It is produced between the Swiss Institute of Bioinformatics and the European Bioinformatics Institute. There are use by non-profit institutions as long as its modified and this statement is not removed. Usage entities requires a license agreement (See http://or send an email to license@isb-sib.ch).
Submitted (MAY-1995) to Submitted (MAY-1995) to FUNCTION: BINDS TO THICK MYOFILAMENTS: -!- TISSUE SPECIFICITY: -!- SIMILARITY: BELONG: SUBFAMILY: -!- SIMILARITY: CONTAIL	

```
ρ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
Best Local S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches
This Swiss Institute ... There are the European Bioinformatics Institute. There are the European Bioinformatics Institutions as long as its content is an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DOMAIN
CONFLICT
CONFLICT
CONFLICT
CONFLICT
                                                                                                     Repeat.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SMART;
SMART;
SMART;
                                                                                                                                                                                                 CHARACTERIZATION.

MEDLINE-97246602; PubMed-9092653;

Ramos W., Tappe N., Talamantez J., E

"Two distinct DNA ligase activities

Saccharomyces cerevisiae.";
                                                                                                                                                                                                                                                                                                                                                                                       01-NOV-1997 (Rel. 35, Created)
01-NOV-1997 (Rel. 35, Last sequence update)
16-OCT-2001 (Rel. 40, Last annotation update)
16-OCT-2001 (Rel. 40, Last annotation update)
DNA ligase II (EC 6.5.1.1) (Pollydeoxyribonucleotide synthase [ATP])
(DNA ligase IV homolog).
DNL4 OR YOR005C OR UND407 OR UNE452.
Saccharomyces cerevisiae (Baker's yeast).
Eukaryota; Fungi; Ascomycota; Saccharomycotina; Saccharomycetes;
Saccharomycetales; Saccharomycetaceae; Saccharomyces.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      YEAST
                                                                                                                                                                                                                                                                                                  Sterky F., Holmberg A., Pettersson B., Uhlen M.;
"The sequence of a 30 kb fragment on the left arm of chromosome XV from Saccharomyces cerevisiae reveals 15 open reading frames, five which correspond to previously identified genes.";
Yeast 12:1091-1095(1996).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DNL4_YEAST
Q08387; Q02914;
Q1-NOV-1997 (Re
                                                                                                                                                                                                                                                                                                                                                    SEQUENCE FROM N.A. MEDLINE=97051599; PubMed=8896276;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DOMAIN
                                                                                                                                                                                                                                                              Submitted
                                                                                                                                                                                                                                                                         Pettersson
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Immunoglobulin
                                                                                                                                                                                                                                                                                 REVISIONS.
                                                                                                                                                                                                                                                                                                                                                                                 NCBI_TaxID=4932;
                                                                           SWISS-PROT entry is copyright. It is produced through a collaboration een the Swiss Institute of Bioinformatics and the EMBL outstation -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 42
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SM00060;
SM00410;
SM00408;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Similarity
9; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FLLRVSAVS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FLLRVSAVS
                                                                                                                                                                                                                                                             (JUL-1996) t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                71
189
267
396
114
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         domain;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FN3; 2.
IG_like;
IGc2; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                002913;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     157
248
352
456
114
117
272
272
411
52045
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             149
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 50
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2.7%;
100.0%;
                                                                                                                                                                                                                                                             y F., Uhlen
to the EMB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Cell
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             <u>-</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          WW;
                                                                                                                                                                                                                                                             hlen M.;
EMBL/GenBank/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FIBRONECTIN TYPE-III 1.
IG-LIKE C2-TYPE DOMAIN 1.
FIBRONECTIN TYPE-III 2.
IG-LIKE C2-TYPE DOMAIN 2.
A. -> G (IN REF. 2).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SS -> RP (IN REF. 2
SS -> CC (IN REF. 2
RASPKP -> ELHQA (IN
F27ABE8ABC7FE77F (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         adhesion;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Score 9;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Mismatches
                                                                                                                                                                                                                     Friedberg
                                                                                                                                                                                                            in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            944
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Muscle protein;
                                                                                                                                                                                                            edberg E. mitotic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             .
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1;
.26;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      REF. 2).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (IN
                                                                                                                                                                                                                                                             databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0;
                                                                                                                                                                                                            extracts
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length 477;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  REF. 1).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                     Tomkinson
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Thick filament;
                                                                                                                                                                                                            of the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                       Of.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0
```

```
γ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MTBC_METTE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local S
Matches 8
                       Pfam; PF
Cobalt;
                                                                                                              This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial
                                                                                                                                                                                                                                                                                                                                                                                                                                               15-JUN-2002
15-JUN-2002
15-JUN-2002
                                                                                                                                                                                                                                                 methyltransferase genes of Methanosarcina barkeri contain
and read-through amber codons.";
J. Bacteriol, 182:2520-2529(2000).
                                                                                                                                                                                                                                                                                      STRAIN-DSM 1825 / TM-1;

MEDLINE-20225851; PubMed-10762254;

Paul L., Ferguson D.J. Jr., Krzycki J.A.;

"The trimethylamine methyltransferase gene and multiple dimethylamine
                                                             EMBL; AF153452; AAD38788.1;
                                                                                       or send an email to license@isb-sib.ch).
                                                                                                     entities requires a license agreement
                                                                                                                                                                                                                                                                                                                            SEQUENCE FROM N.A. STRAIN-DSM 1825 /
                                                                                                                                                                                                                                                                                                                                                                              Archaea; Euryarchaeota; Methanococci; Methanosarcinaceae; Methanosarcina.
                                                                                                                                                                                                                                                                                                                                                                                                        Methanosarcina thermophila
                                                                                                                                                                                                                                                                                                                                                                                                                                  Dimethylamine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Q9YGA3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DNA repair; DNA replication; DNA recombination; Cell division; Ligase; ATP-binding; Nuclear protein; Repeat.

DOMAIN 681 780 BRCT 1.

DOMAIN 840 941 BRCT 2.

BINDING 282 282 AMP (BY SIMILARITY).

SEQUENCE 944 AA; 108514 MW; 7FB6D7927E1719B5 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PROSITE; PS50172; BRCT; 2.
PROSITE; PS00697; DNA_LIGASE_A1;
PROSITE; PS00333; DNA_LIGASE_A2;
PROSITE; PS50160; DNA_LIGASE_A3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SMART; SM00292; BRCT; 1.
TIGRFAMS; TIGR00574; dnl1; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        InterPro; IPR001357; InterPro; IPR000977; Pfam; PF00533; BRCT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EMBL;
                                                  InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MTBC_METTE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Pfam;
                                                                                                                                                                                             -!- SIMILARITY: BELONGS TO THE METHYLAMINE CORRINOID PROTEIN FAMILY.
                                                                                                                                                                                                                                    -!- FUNCTION: Acts as a methyl group
                                                                                                                                                                                                                                                                                                                                                                   NCBI_TaxID=2210;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SGD; S0005531;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Local Similarity
les 8; Conserv
                                                                                                                                                                                                        similarity).
PATHWAY: Methanogenesis from dimethylamines.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     296
                                   PF02310; B12-binding;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PF01068; DNA_ligase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Z74913; CAA99193.1;
U43491; AAC49485.1;
U43491; AAC49484.1;
                       Methanogenesis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GESIKFFS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GESIKFFS 193
                                                 IPR003312; B12-binding
                                                                                                                                                                                                                                                                                                                                                                                                                                (Rel. 41, Created)
(Rel. 41, Last sequence up
(Rel. 41, Last annotation
ne corrinoid protein (Fragm
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DNL4.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      BRCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DNA_ligase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2.4%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ALT_SEQ.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score 8;
Pred. No
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                  (Fragment).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                           update)
                                                                                                                                                                                                                                     carrier between
                                                                                                     (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                             Methanosarcinales;
                                                                                                                                                                                                                                                                                                                                                                                                                                              update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               . 5.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  .6;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 944;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                     mtbB
                                                                                                                                                                                                                                     and
                                                                                                                                                                                                                                                                           in-trame
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0;
                                                                                                                                                                                                                                     mtbA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                     (Ву
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0;
```

SEQUENCE

59

Ä

6257

₩;

479E0F91115B5ECF CRC64;

```
RESULT
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
REALIZE
ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Qy
                                                   Query Match
Best Local S
Matches 7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RL17_BACHD STANDARD; PRT; 120 AA 050635; 09WMV4; 09JPW2; 15-DEC-1998 (Rel. 37, Created) 30-MAY-2000 (Rel. 39, Last sequence update) 16-OCT-2001 (Rel. 40, Last annotation update) 505 ribosomal protein L17.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LT 4
_BACHD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 STRAIN=C-125 / JCM 9153;
MEDLINE-99209008; PubMed-10192928;
Takami H., Takaki Y., Nakasone K., Hirama C., Inoue A., Horikoshi K.;
"Sequence analysis of a 32-kb region including the major ribosomal protein gene clusters from alkaliphilic Bacillus sp. strain C-125.";
Biosci. Biotechnol. Biochem. 63:452-455(1999).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way
                                                                                                                                                                                                                               Pfam; PF01196; Ribosomal_L17; 1.
ProDom; PD004277; Ribosomal_L17; 1.
TIGREAMS; TIGR00059; L17; 1.
                                                                                                                                                                                                                                                                                                            EMBL; AB017508; BAA75299.1; -. EMBL; AP001507; BAB03882.1; -. EMBL; AB010082; BAA24195.1; -. Interpro; IPR000456; Ribosomal_L17.
                                                                                                                                                                                                                                                                                                                                                                                                                                            use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EEMS
                                                                                                                                                                                    Ribosomal protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STRAIN-C-125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE OF 1-83 FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              halodurans and genomic sequence comparison Nucleic Acids Res. 28:4317-4331(2000).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SIKAIN=C-125 / JCM 9153;
MEDLINE=20512582; PubMed
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     STRAIN-C-125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Bacteria; Firmicutes;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Bacillus halodurans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RPLQ OR BH0163
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    +
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Nakasone K., Takaki Y., Takami H., Inoue A., Horikoshi K.; "Cloning and expression of the gene encoding RNA polymerase subunit from alkaliphilic Bacillus sp. strain C-125."; FEMS Microbiol. Lett. 168:269-276(1998).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       "Complete genome sequence of the alkaliphilic bacterium Bacillus halodurans and genomic sequence comparison with Bacillus subtilis.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NCBI_TaxID=86665;
                                                                                                                                                                                                            PROSITE; PS01167; RIBOSOMAL_L17; 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               STRAIN=C-125 / JCM 9153;
MEDLINE=99052103; PubMed=9835038;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SIMILARITY: BELONGS TO THE L17P FAMILY OF RIBOSOMAL PROTEINS
     268
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        269
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NE=20512582; PubMed=11058132;
i H., Nakasone K., Takaki Y., Maeno G., S
F., Hirama C., Nakamura Y., Ogasawara N.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    52
                                                   Similarity 7; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Similarity
7; Conser
     EAKAKEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AKAKELL 58
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AKAKELL 275
                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                              AA;
                                                                                                                                                           Complete p
13393 MW;
                                              100.08; 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Bacillales; Bacillaceae; Bacillus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0
                                                                                                                                                                                    proteome
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score
                                                                            Score 7;
Pred. No.
                                                                                                                                                           DB5C9F1F26515C35 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            7; I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            update)
                                                                            DB 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DB 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sasaki R., Masui N.,
., Kuhara S.,
                                                                                                     Length 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length
                                                   Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          59;
                                                 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        alpha
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                 Gaps
                                                   0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       0
```

```
RESULT 5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
  Query Match
Best Local Similarity
                                                                                                                                   EMBL; Z21857; CAA79912.1; -.
EMBL; Z48008; CAA88057.1; -.
EMBL; Z48432; CAA88355.1; -.
EMBL; Z74052; CAA98560.1; -.
SGD; S0002162; ATP16.
InterPro; IPR001469; ATPSynt_DE.N; 1.
ProDom; PD000944; ATPSynt_DE; 1.
TIGRFAMS; TIGR01216; ATP_Synt_DE; 1.
ATP Synthesis; CE(1); Hydrogen ion transport; Hy
                                                                         CHAIN
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   This SWISS-PROT entry is copyright. It is produced through a between the Swiss Institute of Bioinformatics and the Exhit the European Bioinformatics Institute. There are no restrict use by non-profit institutions as long as its content is modified and this statement is not removed. Usage by and it modified and this statement is not removed.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Giraud M.-F., Velours J.;
"ATP synthase of yeast mitochondria. Isolation
subunit, sequence and disruption of the structu
Eur. J. Biochem. 222:851-859(1994).
                                                                                                                                                                                                                                                                                                                                                                                                                          entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      <del>-</del>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Andre B., Vissers S., Submitted (FEB-1995)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Murphy L., Richards Rajandream M.A.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Saccharomycetales;
NCBI_TaxID=4932;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Saccharomyces cerevisiae (Baker's yeast).
Eukaryota; Fungi; Ascomycota; Saccharomycotina;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ATP synthase delta chain, mitochondrial precursor (EC ATP16 OR YDL004W OR YD8119.03 OR D2935.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 01-NOV-1997 (Rel. 35, Created)
01-NOV-1997 (Rel. 35, Last sequence up
15-JUN-2002 (Rel. 41, Last annotation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Q12165;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ATPD_YEAST
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        STRAIN-S288c;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Submitted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 STRAIN-S288c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MEDLINE-94298825;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        STRAIN-D273-10B/A;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE FROM N.A.,
                                                                                                                       TRANSIT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SÜBÜNIT: F-TYPE ATPASES HAVE 2 COMPONENTS, CF(1) - THE CATALYTIC CORE - AND CF(0) - THE MEMBRANE PROTON CHANNEL. CF(1) HAS FIVE SUBUNITS: ALPHA(3), BETA(3), GAMMA(1), DELTA(1), EPSILON(1). CF(0) HAS THREE MAIN SUBUNITS: A, B AND C.
SUBCELLULAR LOCATION: Mitochondrial.
SIMILARITY: BELONGS TO THE ATPASE EPSILON CHAIN FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CATALYTIC ACTIVITY: ATP + H(2)0 + H(+)(In) =
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ce B., Vissers S., Urrestarazu L., nitted (FEB-1995) to the EMBL/GenBank/DDBJ databases. FUNCTION: PRODUCES ATP FROM ADP IN THE PRESENCE OF A GRADIENT ACROSS THE MEMBRANE. MAY BE INVOLVED IN THE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          OF THE CATALYTIC SECTOR.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          H(+)(Out).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     34
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EAKAKEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (JAN-1995)
                                                               23
160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 / AB972;
                                                                         ΑĄ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PubMed=8026496;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Saccharomycetaceae;
                                                                         160
17020 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         c.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AND
    2.1%;
100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ç
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               the EMBL/GenBank/DDBJ databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE OF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gentles S.,
Score 7; I
                                                                                               ATP
                                                                                                                       MITOCHONDRION
                                                                         P SYNTHASE DELTA CHAIN AE8D0BA364107977 CRC64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Harris D., Barrell B.G.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              23-72;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        update)
    DB 1;
. 12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            There are no restrictions ong as its content is in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Saccharomyces
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           olation of the structural ger
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 112-121
                        Length 160
                                                                                                                                                                   Hydrolase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Saccharomycetes;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ADP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AND 141-160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                + phosphate +
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    F1 delta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               3.6.3.14).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EMBL outstation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                STABILITY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PROTON
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             tor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    collaboration
Loutstation -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             commercia.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
```

```
RESULT
COAT_ST
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          δ.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       21-JUL-1986 (Rel. 121-JUL-1986 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001 (Rel. 16-OCT-2001
                    STRAND
STRAND
                                                        STRAND
TURN
                                                                                                                                                                                   STRAND
HELIX
                                                                                           STRAND
HELIX
                                                                                                                                                                  TURN
                                                                                                                                                                                                                       TURN
                                                                                                                                                                                                                                                                           TURN
                                                                                                                                                                                                                                                                                                                                TURN
                                                                                                                                                                                                                                                                                                                                                                                                 STRAND
STRAND
TURN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   X-RAY CRYSTALLOGRAPHY (2.5 ANGSTROMS).
MEDLINE-85009725; PubMed=6481804;
Jones T.A., Liljas L.;
"Structure of satellite tobacco necrosis virus refinement at 2.5-A resolution.";
J. Mol. Biol. 177:735-767(1984).
                                                                                                                               STRAND
                                                                                                                                                STRAND
                                                                                                                                                                                                                                        STRAND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way
                                                                                                                                                                                                                                                          HELIX
                                                                                                                                                                                                                                                                                              STRAND
                                                                                                                                                                                                                                                                                                             STRAND
                                                                                                                                                                                                                                                                                                                                                STRAND
                                                                                                                                                                                                                                                                                                                                                                 TURN
                                                                                                                                                                                                                                                                                                                                                                                STRAND
                                                                                                                                                                                                                                                                                                                                                                                                                                                      TURN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             use by non-profit institutions as long modified and this statement is not removed.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ysebaert M., van Emmelo J., Fiers W.;
"Total nucleotide sequence of a nearly full-size DNA copy of satellite tobacco necrosis virus RNA.";
J., Mol. Biol. 143:273-287(1980).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE FROM N.A.
MEDLINE=81170584; Pubmed
Ysebaert M., van Emmelo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Coat protein.
Satellite tobacco
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Viruses; Satellites;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   P03606;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        COAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       STNV1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NCBI_TaxID=12445;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2STV; 15-JAN-91.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       V01468; CAA24714.1;
A04217; VCTNS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    STNV1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             7;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RSIIGKS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RSIIGKS
                                                        154
164
167
169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Conservative
                                                                                                                                                                                                                                                                         544
544
544
544
544
544
544
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     3D-structure
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          315
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     necrosis virus 1.
es; Satellite Viruses.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PubMed=6260960;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             40,
                                     21715 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Last sequence update)
Last annotation updat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0;
EE7C4FEA77A2D7A5 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                196
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     There are no rest
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Usage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  after crystallographic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0;
```

```
. Qy
                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MTBC_METBA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      20
                                            Query Match
Best Local S
Matches 7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
Best Local S
Matches
                                                                                                                                       Pfam;
                                                                                                                                                                                                                                                                                                                                                 MEDLINE=20435871; PubMed=10852929; Ferguson D.J. Jr., Gorlatova N., Grahame D.A., Krzycki J.A., "Reconstitution of dimethylamine:coenzyme M methyl transfer discrete corrinoid protein and two methyltransferases purifi Methanosarcina barkeri.";
                                                                                                                                                                                                                     the European Bioinformatics Institute. The second of the statement is not remove entities requires a license agreement (See
                                                                                           SEQUENCE
                                                                                                                                                                         EMBL; AF102623; AAD14629.1; -. HSSP; P13009; 1BMT.
                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE OF 1-15, AND CHARACTERIZATION. STRAIN-MS / DSM 800;
                                                                                                                                                                                                                                                                                                                                                                                                                                     methyltransferase genes of Methanosarcina barkeri contain in-frame and read-through amber codons.";
J. Bacteriol. 182:2520-2529(2000).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE FROM N.A.
STRAIN-MS / DSM 800;
MEDLINE-20225851; PubMed-10762254;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MTBC_METBA
                                                                                                      INIT_MET
                                                                                                              Cobalt; Methanogenesis
                                                                                                                                                InterPro; IPR003312; B12-binding.
InterPro; IPR003759; CoMet_synt_B12.
                                                                                                                                                                                                           or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                This SWISS-PROT entry is copyright. It is produced through between the Swiss Institute of Bioinformatics and the EN
                                                                                                                                                                                                                                                                                                 -!- FUNCTION: Acts as a methyl group carrier between mtbB and mtbA.
-!- PATHWAY: Methanogenesis from dimethylamines.
-!- SIMILARITY: BELONGS TO THE METHYLAMINE CORRINOID PROTEIN FAMILY.
                                                                                                                                                                                                                                                                                                                                       J. Biol. Chem.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Paul L., Ferguson D.J. Jr., Krzycki J.A., "The trimethylamine methyltransferase gen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       15-JUN-2002
15-JUN-2002
15-JUN-2002
                                                                                                                                                                                                                                                                                                                           ·!- FUNCTION: Acts as a methyl
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE FROM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Archaea; Euryarchaeota; Methanococci; Methanosarcinales; Methanosarcinaceae; Methanosarcina.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Dimethylamine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Methanosarcina barkeri.
205
                      269
                                                                                                                           PF02607; B12-binding_2;
                                                                                                                                       PF02310; B12-binding;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                138 LTGESIK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     184 LTGESIK 190
                                            Similarity 7; Conserv
                      AKAKELL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Similarity 7; Conserv
                                                                                         212
                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (Rel. 41, Created)
(Rel. 41, Last sequence up
(Rel. 41, Last annotation
ne corrinoid protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2.1%;
ilarity 100.0%;
Conservative
                                                                                         ĀΑ;
                                                                                                                                                                                                                                                                                                                                      275:29053-29060(2000).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      STANDARD;
                    275
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                144
                                                                                         22373 MW;
                                                                   2.1%;
                                            0;
                                                      Score 7; 1; Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 7; I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0;
                                                                                                                            ب
                                                                                         3DD055DEAAE9CB8F CRC64;
                                            Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Mismatches
                                                                                                                                                                                                                                  removed
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     212
                                                                 DB 1;
                                                                                                                                                                                                                      (See http://www.isb-sib.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DB
14;
                                                                                                                                                                                                                                                   There are no
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A
                                                                                                                                                                                                                                         as its content
                                                                                                                                                                                                                              Usage
                                           0
                                                                 Length 212;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length 196
                                           Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
                                                                                                                                                                                                                                                   restrictions
                                                                                                                                                                                                                                                                                                                                                             purified
                                                                                                                                                                                                                                 and
                                                                                                                                                                                                                                                                 EMBL
                                         0;
                                                                                                                                                                                                                             for
                                                                                                                                                                                                                                                                                                                                                                        with
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0;
                                                                                                                                                                                                                                                                          collaboration
                                                                                                                                                                                                                                                                 outstation
                                                                                                                                                                                                                                           Ín
                                                                                                                                                                                                                                                                                                                                                              from
                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                        ω
                                                                                                                                                                                                                                                      8
                                         0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0;
```

RESULT 8
MBC1\_METAC

```
Ş
                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                     RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
Best Local S
Matches 7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EQUENCE FROM N.A.

CSTRAIN=C2A / ATCC 35395 / DSM 2834;

CSTRAIN=C2A / ATCC 35395 / DSM 2834;

X MEDLINE=21929760; PubMed=11932238;

X MEDLINE=21929760; PubMed=11932238;

X MEDLINE=21929760; PubMed=11932238;

X Galagan J.E., Nusbaum C., Roy A., Endrizzi M.G., Macdonald P.,

A FitzHugh W., Calvo S., Engels R., Smirnov S., Athooor D., Brown A.,

A FitzHugh W., Calvo S., Engels R., Smirnov S., Athooor D., Brown A.,

A Linton L., McEwan P., McKernan K., Talamas J., Tirrell A., Ye W.,

A Linton L., McEwan P., McKernan K., Talamas J., Tirrell A., Guss A.M.,

A Zimmer A., Barber R.D., Cann I., Graham D.E., Grahame D.A., Guss A.M.,

A Zimmer A., Barber R.D., Cann I., Graham D.E., Grahame D.A., Guss A.M.,

A Hedderich R., Ingram-Smith C., Kuettner H.C., Krzycki J.A.,

A Leigh J.A., Li W., Liu J., Mukhopadhyay B., Reeve J.N., Smith K.,

A Springer T.A., Umayam L.A., White O., White R.H., de Macario E.C.,

A Springer T.A., Umayam L.A., White O., White R.H., de Macario E.C.,

A Springer T.A., Sowers K.R., Swanson R.V., Zinder S.H., Lander E.,

A Metcalf W.W., Birren B.;
                                                                                                                                                                               OSTN69:
15-JUN-2002 (Rel. 41, Created)
15-JUN-2002 (Rel. 41, Last sequence update)
15-JUN-2002 (Rel. 41, Last annotation update)
                                                                                                                                                                                                                                                                                      METAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                This SWISS-PROT entry is copyright. It is produced through a collab between the Swiss Institute of Bioinformatics and the EMBL outst the European Bioinformatics Institute. There are no restrictions use by non-profit institutions as long as its content is in modified and this statement is not removed. Usage by and for comentities requires a license agreement (See http://www.isb-sib.ch/an or send an email to license@isb-sib.ch).
              SEQUENCE FROM N.A.
STRAIN-C2A / ATCC 35395 / DSM 2834;
MEDLINE-21929760; PubMed-11932238;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   "The genome of Methanosarcina acetivorans reveals extensive metabolic and physiological diversity."; Genome Res. 12:532-542(2002).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          OBTTEO;
15-JUN-2002 (Rel. 41, Created)
15-JUN-2002 (Rel. 41, Last sequence up
15-JUN-2002 (Rel. 41, Last annotation
                                                                                                                                           Methanosarcina acetivorans
                                                                                                                                                             MTBC3 OR MA2424.
                                                                                                                                                                            Dimethylamine corrinoid protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EMBL; AE010713; AAM03971.1; -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Genome Res. 12:532-542(2002).
-I- FUNCTION: Acts as a methyl group carrier between mtbB and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Dimethylamine c
MTBC1 OR MA0527
                                                                                       NCBI_TaxID=2214;
                                                                                                        Methanosarcinaceae;
                                                                                                                       Archaea; Euryarchaeota;
                                                                                                                                                                                                                                                                    MBC3_METAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Archaea; Euryarchaeota; Methanococci; Methanosarcinales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Methanosarcina acetivorans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MBC1_METAC
                                                                                                                                                                                                                                                                                                                                                                                                                                            Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    similarity).

PATHWAY: Methanogenesis from dimethylamines.

SIMILARITY: BELONGS TO THE METHYLAMINE CORRINOID PROTEIN FAMILY.
                                                                                                                                                                                                                                                                                                                                                        206
                                                                                                                                                                                                                                                                                                                                                                                       269 AKAKELL 275
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Methanogenesis; Complete proteome.
E 213 AA; 22436 MW; 8A0AF2A9C1I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       inaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           corrinoid
                                                                                                                                                                                                                                                                  STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   STANDARD;
                                                                                                                                                                                                                                                                                                                                                        212
                                                                                                        ota; Methanococci; Methanosarcinales;
Methanosarcina.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Methanosarcina.
                                                                                                                                                                                                                                                                                                                                                                                                                                           2.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           protein
Roy A., Endrizzi M.G.,
                                                                                                                                                                                                                                                                                                                                                                                                                          0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 7;
                                                                                                                                                                                                                                                                                                                                                                                                                                            Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PRT;
                                                                                                                                                                                                                                                                  PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8A0AF2A9C1D8C8E4 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                          Mismatches
                                                                                                                                                                                                                                                                  213
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 213 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                           DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            update)
                                                                                                                                                                                                                                                                  A
                                                                                                                                                                                                                                                                                                                                                                                                                                                             1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 213;
                                                                                                                                                                                                                                                                                                                                                                                                                          0,
 Macdonald
                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            a collaboration
 ۳
:
                                                                                                                                                                                                                                                                                                                                                                                                                        0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  mtbA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      .ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        outstation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (By
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         its
                                                                                                                                                                                                                                                                                                                                                                                                                          0
```

```
Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         멁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MBC2_METMA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local S
Matches 7
                                                                                                                                                   SEQUENCE FROM N.A.

STRAIN-GOE! / GO! / ATCC BAA-199 / DSM 3647 / OCM 88;

MEDLINE-21210827; PubMed-12125824;

Deppenmeier U., Johann A., Hartsch T., Merkl R., Schmitz R.A.,

Martinez-Arias R., Henne A., Wiezer A., Baeumer S., Jacobi C.,

Brueggemann H., Lienard T., Christmann A., Boemecke M., Steckel S.,

Bhattacharyya A., Lykidis A., Overbeek R., Klenk H.-P., Gunsalus R.;

Fritz H.-J., Gottschalk G.;

"The genome of Methanosarcina mazel: evidence for lateral gene

transfer between Bacteria and Archaea.";

J. Mol. Microbiol. Biotechnol. 4:453-461(2002).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Allen N., Naylor J., Stange-Thomann N., DeArellano K., Johnson R.,
Linton L., McEwan P., McKernan K., Talamas J., Tirrell A., Ye W.,
Zimmer A., Barber R.D., Cann I., Graham D.E., Grahame D.A., Guss A.M.,
Hedderich R., Ingram-Smith C., Kuettner H.C., Krzycki J.A.,
Leigh J.A., Li W., Liu J., Mukhopadhyay B., Reeve J.N., Smith K.,
Springer T.A., Umayam L.A., White O., White R. H., de Macario E.C.,
Ferry J.G., Jarrell K.F., Jing H., Macario A.J.L., Paulsen I.,
Pritchett M., Sowers K.R., Swanson R.V., Zinder S.H., Lander E.,
Metcalf W.W., Birren B.;
"The genome of Methanosarcina acetivorans reveals extensive metabolic
and physiological diversity.";
Genome Res. 12:532-542(2002).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       15-JUN-2002
15-JUN-2002
            This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EMBL; AE010934; AAM05810.1; -.
Cobalt; Methanogenesis; Complete proteome.
SEQUENCE 213 AA; 22720 MW; 5BAF9326063D06B9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   between the Swiss Institute of Bioinformatics and the EMBL outstati
the European Bioinformatics Institute. There are no restrictions on
use by non-profit institutions as long as its content is in no
modified and this statement is not removed. Usage by and for commer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       This SWISS-PROT entry is copyright. It is produced through a collaboration
                                                                                  -!- PATHWAY: Methanogenesis from dimethylamines.
                                                                                                                                    J. Mol. Microbiol. Biotechnol. 4:453-461(200)
                                                                                                                                                                                                                                                                                                                                                                                                                  Methanosarcina mazei (Methanosarcina
                                                                                                                                                                                                                                                                                                                                                                                                                                                       Dimethylamine corrinoid protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            P58980;
15-JUN-2002
                                                                                                                                                                                                                                                                                                                                                                                     Methanosarcinaceae;
                                                                                                                                                                                                                                                                                                                                                                                                   Archaea; Euryarchaeota; Methanococci;
                                                                                                                                                                                                                                                                                                                                                                                                                                          MTBC2 OR MM2961
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MBC2_METMA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FitzHugh W., Calvo S.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             -1- SIMILARITY: BELONGS TO THE METHYLAMINE CORRINOID PROTEIN FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 -!- FUNCTION: Acts as a methyl group carrier
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 similarity)
PATHWAY: Me
                                                                                                                   similarity).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        269 AKAKELL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Similarity 7; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AKAKELL
                                                                                                                                                                                                                                                                                                                                                                                                                                                       (Rel. 41, Last sequence update) (Rel. 41, Last annotation updat ne corrinoid protein 2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (Rel. 41, Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           llarity 100.0%;
Conservative 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Methanogenesis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                     Methanosarcina.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Engels R.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 7; DB 1; Pred. No. 15; 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 from
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              dimethylamines.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Smirnov S.,
                                                                                                                                                                                                                                                                                                                                                                                                                        frisia).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DB
15;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         update)
                                                                                                                                                                                                                                                                                                                                                                                                     Methanosarcinales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ₿
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1;
                                                                                                                                        between
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 between
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Atnoor D.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 213
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 mtbB
                                                                                                                                        mtbB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Brown
                                                                                                                                        and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 mtbA
                                                                                                                                        mtbA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            outstation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                          R.P.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0
```

as long

```
RESULT
RESULT
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOTE
ACC NOT
           MBC2_METAC
ID MBC2_M
AC Q8TS71
DT 15-JUN
                                                                                                                       밁
                                                                                                                                                 Qy
                                                                        RESULT 12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SARCCCC
                                                                                                                                                                                    Matches
                                                                                                                                                                                                  Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
Best Local
                          MBC2_METAC Q8TS71;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Depenmeter U. Johann A., Hartsch T., Merkl R., Schmitz R.A., Martinez-Arias R., Henne A., Wiezer A., Baeumer S., Jacobi C., Brueggemann H., Lienard T., Christmann A., Boemecke M., Steckel Bhattacharyya A., Lykidis A., Overbeek R., Klenk H.-P., Gunsalu Fritz H.-J., Gottschalk G.,

"The genome of Methanosarcina mazei: evidence for lateral gene transfer between Bacteria and Archaea.",

J. Mol. Microbiol. Biotechnol. 4:453-461(2002).

-I- FUNCTION: Acts as a methyl group carrier between mtbB and m
                                                                                                                                                                                                                                                                                                                                                                                           This SWI
between
                                                                                                                                                                                                                                                                         EMBL; AE013445; AAM31748.1; ALT_INIT.
      15-JUN-2002 (Rel. 41, Created)
                                                                                                                                                                                                                                                                                                                                   the European Bioinformatics Institute. There are no resuse by non-profit institutions as long as its content modified and this statement is not removed. Usage by an
                                                                                                                                                                                                                                                                                                                         entities requires a license agreement
                                                                                                                                                                                                                                                                                                                                                                                                                                                            -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    STRAIN-Goe1 / Go1 / ATCC BAA-199 / DSM 3647 / OCM
MEDLINE-22120827; PubMed-12125824;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               modified and this statement is not removed. entitles requires a license agreement (See or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE FROM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EMBL; AE013550; AAM32657.1; ALT_INIT.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Methanosarcinaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Archaea; Euryarchaeota;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Methanosarcina mazei (Methanosarcina
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 modified
                                                                                                                                                                                                                                                                                                        send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                            similarity).
PATHWAY: Methanogenesis from dimethylamines.
SIMILARITY: BELONGS TO THE METHYLAMINE CORRINOID PROTEIN FAMILY.
                                                                                                                                                                                                                                                                                                                                                                              SWISS-PROT entry is copyright. It is produced through a collaboration een the Swiss Institute of Bioinformatics and the EMBL outstation
                                                                                                                       207
                                                                                                                                                     269
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      269 AKAKELL 275
                                                                                                                                                                                                                                           Methanogenesis.
E 216 AA; 22980
                                                                                                                                                                                   Similarity 7; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Methanogenesis
E 214 AA; 226
                                                                                                                    AKAKELL
                                                                                                                                                   AKAKELL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Similarity 7; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AKAKELL 213
                                                                                                                                                                               Conservative 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                      STANDARD;
                                                                                                                     213
                                                                                                                                                 275
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Methanosarcina
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     22674 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Methanococci;
                                                                                                                                                                                                                                             MW;
                                                                                                                                                                                                               Score 7;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 7; DB 1
Pred. No. 15;
0; Mismatches
                                  PRT;
                                                                                                                                                                                             Pred.
                                                                                                                                                                                                                                           B8B76B604651FA76 CRC64;
                                                                                                                                                                              Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2E3CA138C0A44DAF CRC64;
                                                                                                                                                                                             ŏ.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               update)
                                    216
                                                                                                                                                                                    DB
15;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  frisia).
                                                                                                                                                                                                                                                                                                             (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               216
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DB 15;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Methanosarcinales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               update)
                                    A
                                                                                                                                                                                                             1:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ā
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          . Usage by and for commercial
http://www.isb-sib.ch/announce/
                                                                                                                                                                                                           Length 216;
                                                                                                                                                                            0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 214
                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       88;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                  restrictions on
                                                                                                                                                                                                                                                                                                                                      and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Steckel S.,
Gunsalus R.P.,
                                                                                                                                                                          0;
                                                                                                                                                                                                                                                                                                                                      for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ٥; ډ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                mtbA
                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         commercial
                                                                                                                                                                                                                                                                                                                                                   no
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (Ву
                                                                                                                                                                         0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    0
DLDH_RHIET
                                                                                                                                                                                                                                                                                                                                                                 В
                                                                                                                                                                                                                                                                                                                                                                                           δÃ
                                                                                                                                                                                                                                                                                                                    RESULT 13
                                                                                                                                                                                                                                                                                                                                                                                                                              Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local :
                                                          SEQUENCE FF
STRAIN=CE3;
                                                                                                                                                                                                                                                                 005940;
                                                                                           Rhizobiaceae; Rhi
NCBI_TaxID=29449;
[1]
                                         MEDLINE=97286510;
                                                                                                                                  Bacteria; Proteobacteria;
                                                                                                                                                     Rhizobium etli.
                                                                                                                                                                       (Fragment).
                                                                                                                                                                                                                                                                                   DLDH_RHIET
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               STRAIN-C2A /
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                15-JUN-2002 (Rel. 41, Last sequence up 15-JUN-2002 (Rel. 41, Last annotation Dimethylamine corrinoid protein 2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE FROM N.A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Methanosarcinaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MEDLINE=21929760;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NCBI_TaxID=2214;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Archaea; Euryarchaeota;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Methanosarcina acetivorans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MTBC2 OR MA0934.
                                                                                                                                                                                                                                                                                                                                                                 207
                                                                                                                                                                                                                                                                                                                                                                                                                           Similarity 7; Conserv
                                                                          FROM N.A
                                                                                                                                                                                                                                                                                                                                                                                           AKAKELL
                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ATCC
                                                                                                                       Rhizobium
                                                                                                                                                                                                                                                                               STANDARD;
                                                                                                                                                                                                                                                                                                                                                             213
                                                                                                                                                                                                                                                                                                                                                                                           275
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           35395 / DSM 2834;
PubMed=11932238;
                                                                                                                                                                                                                                                                                                                                                                                                                                        2.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Methanosarcina
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Methanococci;
                                                                                                                                    alpha
                                                                                                                                                                                                                                                                                                                                                                                                                           0;
                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 7;
Pred. No.
                                                                                                                                                                                                                                                                               PRT;
                                                                                                                                  subdivision;
                                                                                                                                                                                                                                                                                                                                                                                                                         Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  on update)
                                                                                                                                                                                                                                                                               277
                                                                                                                                                                                                                                                                                                                                                                                                                                DB ,
                                                                                                                                                                                                                                                                               A
```

```
RA Galagan J.E., Nusbaum C., Roy A., Endrizzi M.G., Macdonald P., A FitzHugh W., Calvo S., Engels R., Smirnov S., Atnoor D., Brown A., Allen N., Naylor J., Stange-Thomann N., DeArellano K., Johnson R., Linton L., McEwan P., McKernan K., Talamas J., Tirrell A., Ye W., A Linton L., McEwan P., McKernan K., Talamas J., Tirrell A., Ye W., A Linton L., McEwan P., McKernan K., Talamas J., Tirrell A., Ye W., A Leigh J.A., Liu J., Mukhopadhyay B., Reeve J.N., Smith K., A Leigh J.A., Liu J., Mukhopadhyay B., Reeve J.N., Smith K., Springer T.A., Umayam L.A., White O., White R.H., de Macario E.C., A Ferry J.G., Jarrell K.F., Jing H., Macario A.J.L., Paulsen I., A Pritchett M., Sowers K.R., Swanson R.V., Zinder S.H., Lander E., McCalf W.W., Birren B., The genome of Methanosarcina acetivorans reveals extensive metabolic Genome Res. 12:532-542(2002)
                                                                                                                                                                                                                                                                                                                                                                                                                               15-JUL-1999 (Rel. 38, Created)
15-JUL-1999 (Rel. 38, Last sequence update)
15-JUL-1999 (Rel. 38, Last annotation update)
Probable dihydrolipoamide dehydrogenase (EC 1
Pyruvate and 2-oxoglutarate dehydrogenases co
MEDLINE=97286510; PubMed=9141657; Tate R., Riccio A., Taccarino M., Patriarca E.J.; "Cloning and transcriptional analysis of the lipa synthetase) gene from Rhizobium etil.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EMBL; AE010758; AAM04367.1; ALT_INIT.
Cobalt; Methanogenesis; Complete proteome.
SEQUENCE 216 AA; 23101 MW; F18A97039F4B57FA CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 similarity).
-!- PATHWAY: Methanogenesis from dimethylamines
-!- SIMILARITY: BELONGS TO THE METHYLAMINE CORR:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      -!- FUNCTION: Acts as a methyl group carrier
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TO THE METHYLAMINE CORRINOID PROTEIN FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Methanosarcinales;
                                                                                                                                                                                                                                                                                                                                                                                                                                               complexes)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1.8.1.4)
                                                                                                                                                                                                                                                                                                                          Rhizobiaceae group
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      between mtbB and mtbA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 216,
                                  (lipoic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (E3
                                                                                                                                                                                                                                                                                                                                                                                                                                           (E3 component (ORF-E3)
                                  acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (Ву
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0;
```

```
SO TTTTWW
               RESULT 14
YHDF_BACS
                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                               δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matches
                                                                                                                                                                                                                                                                                                                                           YHDF_BACSU
007575;
STRAIN-168;
MEDLINE-98044033; Pubmed-9384377;
KUNST F., Ogasawara N., Moszer I., Albertini A.M., Alloni G.,
Azevedo V., Bertero M.G., Bessieres P., Bolotin A., Borchert S.,
Borriss R., Boursier L., Brans A., Braun M., Brigmell S.C., Bron S.,
Brouillet S., Bruschi C.V., Caldwell B., Capuano V., Carter N.M.,
Choi S.K., Codani J.J., Connerton I.F., Cummings N.J., Daniel R.A.,
Denizot F., Devine K.M., Dusterhoft A., Ehrlich S.D., Emmerson P.T.,
Denizot F., Devine K.M., Dasterhoft A., Ehrlich S.D., Emmerson P.T.,
                                                                                                                                                                                                                                                                                                   15-JUL-1998
15-JUL-1998
15-JUN-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             InterPro; IPR001327; FAD_pyr_redox.
InterPro; IPR001100; Pyr_redox.
InterPro; IPR001099; pyr_redox_dim.
Pfam; pF00070; pyr_redox; 1.
Pfam; pF00852; pyr_redox_dim; 1.
PRINTS; PR00411; PNDRDTASEI.
PRODOm; PD000139; FAD_pyr_redox_1; PARTIAL.
PROSITE; PS00076; PYRIDINE_REDOX_1; PARTIAL.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NP_BIND
ACT_SITE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          the European Bioinformatics Institute. There are no rest use by non-profit institutions as long as its content modified and this statement is not removed. Usage by an
                                                                                                                                                                                                                                                                                                                                                                        BACSU
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EMBL; Y11708; CAA72399:1; -. HSSP; P18925; 3LAD.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ç
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     +++
                                                                                                                                                                                                                                               Bacillus subtilis.
Bacteria; Firmicutes;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                entities
                                                                                                                                      SEQUENCE FROM N.A
                                                                                                                                                                  Submitted
                                                                                                                                                                               Noback M.A.,
                                                                                                                                                                                                        SEQUENCE FROM N.A.
                                                                                                                                                                                                                                  NCBI_TaxID=1423;
                                                                                                                                                                                                                                                                                        Hypothetical
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NON_TER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Redox-active center;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SUBUNIT: HOMODIMER (BY SIMILARITY).
SUBCELLULAR LOCATION: Cytoplasmic (Potential).
MISCELLANEOUS: THE ACTIVE SITE IS A REDOX-ACTIVE DISULFIDE BOND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               S MICTOBIOL. Lett. 149:165-172(1997).

FUNCTION: LIPOAMIDE DEHYDROGERNASE IS A COMPONENT OF THE ALPHA-
KETOACID DEHYDROGERASE COMPLEXES (BY SIMILARITY).

CATALYTIC ACTIVITY: Dihydrolipoamide + NAD(+) = lipoamide + NA
COFACTOR: FAD (BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SIMILARITY: BELONGS TO THE PYRIDINE NUCLEOTIDE-DISULFIDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               OXIDOREDUCTASES CLASS-I.
                                                                                                                                                                                                                                                                                                                                                                                                                                                      268
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                             EAKAKEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                     EAKAKEL 274
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                requires a license agreement (See http://www.isb-sib.ch/announce/
                                                                                                                                                               A., Terpstra
(JUN-1997) 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1
115
259
277
                                                                                                                                                                                                                                                                                     8 (Rel. 36, Created
8 (Rel. 36, Last so
2 (Rel. 41, Last an
al oxidoreductase)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AA;
                                                                                                                                                                                                                                                                                                                                                          STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1
125
259
29547
                                                                                                                                                           to t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Glycolysis; Oxidoreductase; NAD; Flavoprotein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            100.0%;
                                                                                                                                                                                                                                                                                                  Last sequence update)
                                                                                                                                                                                                                                                                                                                               Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2.1%;
                                                                                                                                                                                                                                                Bacillales;
                                                                                                                                                                 the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MW;
                                                                                                                                                               Holsappel S., Venema G., Bron
ne EMBL/GenBank/DDBJ databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 7; DI
                                                                                                                                                                                                                                                                                     yhdF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FAD (FLAVIN PART) (BY SIMILARITY)
BY SIMILARITY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CD3E3B5DB1FE4C4F CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Mismatches
                                                                                                                                                                                                                                                                                      (EC
                                                                                                                                                                                                                                               Bacillaceae;
                                                                                                                                                                                                                                                                                      n update)
                                                                                                                                                                                                                                                                                                                                                         289 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DB 1;
5. 19;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 277
                                                                                                                                                                                                                                                Bacillus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              lipoamide + NADH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     restrictions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                and
                                                                                                                                                                            :
:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                commercia.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           no
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0
```

```
RESULT 15
PSC2_M
PSC2_M
AC 086344
AC 086344
AC 15-JUN
DT 15-JUN
DT 15-JUN
DT 15-JUN
DT Phosph
GN PSTC2
OS Mycoba
OC Bacter
OC Actino
OX NCBI_T
RN [1]
RP SEQUEN
RX MEDLIN
                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Guiseppi G., Guy B.J., Hagack, Haiech J., Harwood C.R., Henaut A., A Hilbert H., Holsappel S., Hosono S., Hullo M.F., Itaya M., Jones L., Joris B., Karamata D., Kasahara Y., Klaerr-Blanchard M., Klein C., Robayashi Y., Koetter P., Koningstein G., Krogh S., Kumano M., Klein C., Robayashi Y., Koetter P., Koningstein G., Krogh S., Kumano M., Ra Kurita K., Lapidus A., Lardinois S., Lauber J., Lazarevic V., Lee S.M., Levine A., Liu H., Masuda S., Mauel C., Medigue C., Lee S.M., Levine A., Liu H., Masuda S., Mauel C., Medigue C., Redia N., Medilado R.P., Mizuno M., Moestl D., Nakai S., Noback M., Ra Noone D., O'Reilly M., Ogawa K., Ogiwara A., Oudega B., Park S.H., Parro V., Pohl T.M., Portetelle D., Porwollik S., Prescott A.M., Prescoan E., Pujic P., Purnelle B., Rapoorit G., Rey M., Reynolds S., Rieger M., Rivolta C., Rocha E., Roche B., Rose M., Sadale Y., Ra Rieger M., Rivolta C., Rocha E., Roche B., Rose M., Sadale Y., Sakiguchi J., Sekowska A., Serror S.J., Serror P., Shin B.S., Soldo B., Sekiguchi J., Sekowska A., Seror S.J., Serror P., Shin B.S., Soldo B., Sakiguchi J., Tamakoshi A., Tanaka T., Terpstra P., Tognoni A., Ra Sekiguchi J., Sekowska A., Seror S.J., Serror P., Shin B.S., Soldo B., Sakiguchi J., Tamakoshi A., Tanaka T., Terpstra P., Tognoni A., Varamoto W., Vannier F., Vassarotti A., Ra Viatai A., Wambutt R., Wedlet E., Wedler H., Weitzenegger T., Vashikawa H.F., Zumstein E., Yoshikawa H., Danchin A.; "The complete genome sequence of the Gram-positive bacterium Bacillus Propositive bacterium Bacillus
                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local S
Matches 7
                                                                                                                                                    PSC2_MYCTU STANDARD; PRT; 324 AA. 086344; Q50797; 15-JUN-2002 (Rel. 41, Created) 15-JUN-2002 (Rel. 41, Last sequence update) 15-JUN-2002 (Rel. 41, Last annotation update Phosphate transport system permease protein PSTC2 OR RY0929 OR MT0956 OR MTCY21C12.23.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NP_BIND
ACT_SITE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SubtiList; BG13012; yhdF.
InterPro; IPR002198; ADH_short.
Pfam; PF00106; adh_short; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EMBL; Y14082; CAA74490.1; -. EMBL; Z99109; CAB12784.1; -. HSSP; Q12634; 1YBV.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         the European Bioinformatics Institute. There are no rest use by non-profit institutions as long as its content modified and this statement is not removed. Usage by an
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Nature 390:249-256(1997).
--- STMILARITY: BELONGS TO THE SHORT-CHAIN DEHYDROGENASES/REDUCTASES
                                                                                                   Bacteria; Actinobacteria;
Actinomycetales; Coryneba
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ghim S.Y., Glaser P., Goffeau A.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Fritz C., Fujita M., Fujita Y., Fuma S., Galizzi A., Galleron Ghim S.Y., Glaser P., Goffeau A., Golightly E.J., Grandi G.,
    MEDLINE=97000022;
                                        SEQUENCE FROM
                                                                                                                                     Mycobacterium tuberculosis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Hypothetical
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PROSITE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        entities requires a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        This
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       subtilis
                                                                             NCBI_TaxID=1773;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SWISS-PROT entry is copyright. It is produced through a ceen the Swiss Institute of Bioinformatics and the EMBL
                                                                                                                                                                                                                                                                                                                                                                           84
                                                                                                                                                                                                                                                                                                                                                                                                               60
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Similarity
7; Conserv
                                                                                                                                                                                                                                                                                                                                                                                               EETRKRI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PS00061; ADH_SHORT; 1.
lcal protein; Oxidoreductase;
                                                                                                                                                                                                                                                                                                                                                                           EETRKRI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             194
289
                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                          N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AA;
                                                                                                                                                                                                                                                                                                                                                                           90
                                                                                                 Corynebacterineae;
    PubMed=8843165;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      license agreement (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         73
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   31509 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2.1%;
                                                                                                                     Actinobacteria (class); Actinobacteridae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                        0
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Score 7; DB 1
Pred. No. 20;
O; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     BY SIMILARITY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NAD OR NADP (BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 4EC98C62B9241BC1 CRC64;
                                                                                                   Mycobacteriaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     E., Yoshikawa H., Danchin A.;
Gram-positive bacterium Bacillus
                                                                                                                                                                                                                                                                                                                                                                                                                                                              DB
20;
                                                                                                                                                                                            update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 There are no restrictions
                                                                                                                                                                            pstC-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 289
                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                   Mycobacterium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Henaut A., ., Jones L.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Reynolds S.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       a collaboration
                                                                                                                                                                                                                                                                                                                                                                                                                                                      0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     .
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     outstation
                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
```

Braibant M., Lefevre P., de Wit L., wattiez R., Content J.;

Coms J., Peirs P., Huygen K.,

```
망
                                   ğ
                                                                                                                                                                                                                            Query Match
Best Local :
                                                                          Matches
                                                                                                                                              TRANSMEM
TRANSMEM
TRANSMEM
TRANSMEM
TRANSMEM
TRANSMEM
TRANSMEM
CONFLICT
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          laboratory strains.";

laboratory strains.";

submitted (APR-2001) to the EMBL/GenBank/DDBJ databases.

-I-FUNCTION: PART OF THE BINDING-PROTEIN-DEPENDENT TRANSPORT SYSTEM FOR PHOSPHATE; PROBABLY RESPONSIBLE FOR THE TRANSLOCATION OF THE FOR PHOSPHATE ACROSS THE MEMBRANE (BY SIMILARITY).

-I- SUBSTRATE ACROSS THE MEMBRANE (BY SIMILARITY).

-I- SUBCELLULAR LOCATION: Integral membrane protein (By similarity).

-I- SIMILARITY: BELONGS TO THE BINDING-PROTEIN-DEPENDENT TRANSPORT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MEDLINE-98295987; PubMed=9634230; Cole S.T., Brosch R., Parkhill J., Garnier T., Churcher C., Harris D. Gordon S.V., Eiglmeier K., Gas S., Barry C.E. III, Tekaia F., Badcock K., Basham D., Brown D., Chillingworth T., Connor R., Badcock K., Basham D., Brown D., Chillingworth T., Connor R., Davies R., Devlin K., Feltwell T., Gentles S., Hamlin N., Holroyd S., Davies R., Devlin K., Feltwell T., Gentles S., Murphy L., Davies R., Jagels K., Krogh A., McLean J., Moule S., Murphy L., Oliver S., Osborne J., Quail M.A., Rajandream M.A., Rogers J., Rutter S., Seeger K., Skelton S., Squares S., Squares R., Stelston J.E., Taylor K., Whitehead S., Barrell B.G.;
                                                                                                                                                                                                                                                                                                                                                                                               EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      entities requires a license agreement (S or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Fleischmann R.D., Alland D., Eisen J.A., Carpenter L., White O., Peterson J., DeBoy R., Dodson R., Gwinn M., Haft D., Hickey E., Kolonay J.F., Nelson W.C., Umayam L.A., Ermolaeva M., Salzberg S.L., Delcher A., Utterback T., Weidman J., Khouri H., Gill J., Mikula A.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE FROM N.A.
STRAIN-CDC 1551 / Oshkosh;
Fleischmann R.D., Alland D., Eisen J.A.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sulston J.E., Taylor K., Whitehead S., Barrell B.G.; "Deciphering the biology of Mycobacterium tuberculosis from the complete genome sequence."; Nature 393:537-544(1998).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     "Identification of a second Mycobacterium tuberculosis gene cluster encoding proteins of an ABC phosphate transporter."; FEBS Lett. 394:206-212(1996).
                                                                                                                                                                                                                                                                                                                                                                                                                                    EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE FROM N.A. STRAIN-H37Rv;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Bishai W.;
                                                                                                                                                                                                                                                                                                                                                                            rubercuList; Rv0929;
                                                                                                                                                                                                                                                                                                                       ROSITE;
                                                                                                                                                                                                                                                                                                                                           Piam;
                                                                                                                                                                                                                                                                                                                                                            interPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Whole genome comparison of Mycobacterium tuberculosis clinical and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SUBSTRATE ACROSS THE MEMBRANE (BY SIMILARITY).
SUBCELLULAR LOCATION: Integral membrane protein (By similarity).
SIMILARITY: BELONGS TO THE BINDING-PROTEIN-DEPENDENT TRANSPORT
SYSTEM PERMEASE FAMILY. CYSTW SUBFAMILY.
                                                                                                                                                                                             rr00528; BPD_transp.
TE; PS00402; BPD_TRANSP_INN_MEMBR; 1.
TE; PS00402; BPD_TRANSP_INN_MEMBR; 1.
TER 28 50 POTENTIAL.
EM 87 109 POTENTIAL.
M 122 144 POTENTIAL.
172 194 POTENTIAL.
172 194 POTENTIAL.
                                     132 ANFFTST 138
                                                                                                                                                                                                                                                                                                                                                                                            Z47983; CAA88026.1; -.
Z95209; CAB08489.1; -.
AE006981; AAK45203.1; -.
61 ANFFTST 67
                                                                                                                                                                                                                                                                                                                       PF00528; BP
                                                                          Similarity 7; Conserv
                                                                                                                                                324 AA;
                                                                          Conservative
                                                                                                                                                                                     50
109
144
144
194
257
313
                                                                    100.08; P1
                                                                                                                                                  34261 MW;
                                                                        ; Score 7; DB 1
%; Pred. No. 23;
0; Mismatches
                                                                                                                                            POTENTIAL.
MISSING (IN REF. 1).
C54657C8A3CEAC5 CRC64;
                                                                                       DB 1;
). 23;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (See http://www.isb-sib.ch/announce/
                                                                                                         Length 324
                                                                        0,
                                                                        Indels
                                                                        0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Harris D.,
                                                                        Gaps
                                                                        0;
```

Search completed: June 24, 2003, 18:54:57

Job time : 17 secs

```
Result
No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Minimum DB
Maximum DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Run
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     OM nucleic -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                       40.2
40.2
39.4
38.6
38.2
38.2
37.2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            seq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              nucleic search, using sw
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Issued_Patents_NA:*
1: /cgn2_6/ptodata/1,
2: /cgn2_6/ptodata/1,
3: /cgn2_6/ptodata/1,
4: /cgn2_6/ptodata/1,
5: /cgn2_6/ptodata/1,
6: /cgn2_6/ptodata/1,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          length: 0
length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             June 24, 2003, 12:30:29 ; Search time 80 Seconds (without alignments) 8280.273 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query
Match Length DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                441362 segs, 153338381 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              IDENTITY_NUC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-09-870-406A-32
2160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gapop 10.0 , Gapext 1.0
                                                                                                                                                                                                                                                                                                                               1.8
1.8
1.8
1.7
1.7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   gaattccccacgtcaacgtg.....tcgtctctacctaatcaaca 2160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GenCore version 5.1.6 Copyright (c) 1993 - 2003 Compugen Ltd
                                        000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /cgn2_6/ptodata/1/ina/5A_COMB.seq:*
/cgn2_6/ptodata/1/ina/5B_COMB.seq:*
/cgn2_6/ptodata/1/ina/6A_COMB.seq:*
/cgn2_6/ptodata/1/ina/6B_COMB.seq:*
/cgn2_6/ptodata/1/ina/BCTUS_COMB.seq:*
/cgn2_6/ptodata/1/ina/Backfiles1.seq:*
                                                           6265
50000
162450
432
                                                                                                                                                                                                                                                                                                                                                                                                                                  19124
112132
              US-08-232-463-14
US-08-232-463-14
US-08-233-462-1
US-08-973-462-1
US-08-973-462-1
US-08-973-462-1
US-08-98-14-150-3
US-09-14-150-3
US-09-14-150-1438
US-08-481-682-18
US-08-481-7008-7
US-09-007-383-14
US-08-481-7008-7
US-09-007-383-17
US-08-954-441-1
US-08-954-441-1
US-08-954-441-766-17
US-09-244-796-17
US-09-146-053-4
US-09-146-053-4
US-09-146-053-4
US-09-134-001C-1126
US-09-134-001C-1126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ħ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Description
sequence
sequence
sequence
sequence
sequence
sequence
sequence
sequence
sequence
sequence
sequence
sequence
sequence
sequence
sequence
                                                                                                                                                                                                                                                                                                                                                 Sequence
Sequence
                                                                                                                                                                                                                                                                                                                                                                                       Sequence
Sequence
Sequence
Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence
Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence
                                  13, Appli
11, Appli
14, Appli
14, Appli
14, Appli
14, Appli
14, Appli
14, Appli
17, Ap
                 19, A<sub>1</sub>
126, 1
1126,
                                                                                                                                                                                                                                                                                                                                                                                                                                                   Appli
Appli
Appli
Appl:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ဂ ဂ ဂ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              രവ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              000
Query Match
                                                                                                                                                                                                                                            TELEFAX:
```

```
, CLONE: PTZgpt-F1s
US-08-232-463-14
                                                                                                                                                                                                                                                                                   COMPUTER READABLE FORM:

MEDIUM TYPE: Floppy disk

COMPUTER: Floppy disk

SOFTWARE: PATENTION DATA:

APPLICATION NUMBER: US/08/232,463

FILING DATE: US/07/935,313

FILING DATE: US/07/935,313

FILING DATE: DESTRICTION:

APPLICATION NUMBER: EP 91 114 300.6

FILING DATE: J6-NGC-1991

ATTORNEY/AGENT INFORMATION:

NAME: BENT, Stephen A.

REGIESTRATION NUMBER: 29,768

REFERENCE/DOCKET NUMBER: 30472/114 IMM

TELEDOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 14, Application US/08232463 Patent No. 5670367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GENERAL INFORMATION:
APPLICANT: DORNER, F.
APPLICANT: SCHEIFLINGER, F.
APPLICANT: FALKNER, F. G.
TITLE OF INVENTION: RECOMBINANT FOWLPOX VIRUS
NUMBER OF SEQUENCES: 52
CORRESPONDENCE ADDRESS:
ADDRESSE: Foley & Lardner
STREET: 1800 Diagonal Road, Suite 500
                                                                                                                                                   TELEX: 899149
INFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
LENGTH: 7218 base pairs
                                  TOPOLOGY: line IMMEDIATE SOURCE: pTZgpt-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    STREET: 1800 Diac
CITY: Alexandria
                                                                                                         STRANDEDNESS:
                                                                                                                                                                                                                                                                     TELEPHONE:
                                                                                                                           nucleic acid
                                                                                                                                                                                                                                                 (703)836-9300
(703)683-4109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            USA
                                                                                   linear
                                                                                                       single
                                                                                                                                                                                                       14:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Version #1.25
                                                                                                                                                                                                                                                                                                                                                                                 !
```

00 0000

C O

2:58;

Score 53.6;

DB 1;

Length 7218;

00000

O

Matches 8; Conserv

Conservative

2.18;

```
APPLICANT: SCHEIFLINGER, F.
APPLICANT: FALKNER, F. G.
TITLE OF INVENTION: RECOMBINANT FOWLDOX VIRUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1933 CAAGTCAGATTTCAGAGTCATCAACACAAGAGGACGTGAACTTAGGGAAGTAGGAATAAG 1992
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1813 CAGAGTACCAAACAGAAGATGGAACTGTAAGCGATAAACGAAGTATCATTGGGAAGTCAT 1872
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1633 AAAAGATTAGTAGGTGAAGCAAAGGCAAAGGTATAAAAGATTTGATCCCATTAGTGTCCC 1692
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CATTATTAATTAGCTTGTGAAGATGTTGAAAATGATTTGAACAAAATCAGGAGCTGCTAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ATGANACTCGTCCATGGGATTTAACAGGACAATTTATCGGCTAACAATGATATATGTGAA 1932
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Release #1.0, Version #1.25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Pred. No. 6.9e-05;
23; Mismatches 147; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1752
                             Ş
                                                        밁
                                                                                  Qγ
                                                                                                                                                                      ; NAME/KEY: CDS
; LOCATION: (1)..(5361)
US-08-973-462-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US-08-973-462-2/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   QY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            δÃ
                                                                                                                                                                                                                                                          APPLICANT: DAUBERSIES, PIERRE
APPLICANT: DAUBERSIES, PIERRE
TITLE OF INVENTION: MALARIAL PRE-ERYTHROCYTIC STAGE POLYPEPTIDE MOLECULES
FILE REPERENCE: 0660-0125-0 PCT
CURRENT PILING DATE: 1998-02-06
EARLIER APPLICATION NUMBER: PCT/FR96/00894
EARLIER APPLICATION NUMBER: PCT/FR96/00894
EARLIER FILING DATE: 1996-06-12
EARLIER APPLICATION NUMBER: PCT/FR96/00894
EARLIER APPLICATION NUMBER: PCT/FR96/00894
EARLIER FILING DATE: 1995-06-13
NUMBER OF SEQ ID NOS: 29
SOFTMARE: Patentin Ver. 2.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ρy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                 Matches
                                                                                                                              Query Match
Best Local :
                                                                                                                                                                                                                                                                                                                                                                                                                                       GENERAL INFORMATION:
APPLICANT: DRUILHE, PIERRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US-08-232-463-14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence 2, Application US/08973462B
Patent No. 6191270
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence
                                                                                                                                                                                                               TYPE: DNA
ORGANISM: P. falciparum
FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    STRANDEDNESS: singl
TOPOLOGY: linear
IMMEDIATE SOURCE:
CLONE: PTZGPt-F1s
                                                                                                                             Local
                                         3984 TAATATATCTTCTTCAAGATCTTTTAAATCAGATACTTTTTCGATCTTGTCTTCTTCGAC 3925
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Local Similarity
les 15; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TYPE: n
852 GTCTTTGACTTTGCGGGGTTTCATGGAGCCTGAGTATGATACTCCCATATTCTGTGCTAAC 911
                                                             1335 YYYYYYYYYYYY 1348
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1039 TAATCCTTTGCATC 1052
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          979 AGGTCTGTATTGTCCAAACTGATGTTCAATATTTTACTGTATGTTCTTCTTTAGGGACCT 1038
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      919 CATCTACCAACGTTAACATAGTTGTATTGTAAGTTATCTTCTAGTTATGCTGGAGTTATC 978
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             859 ACTTTGCGGGTTTCATGGAGCCTGAGTATGATACTCCCATATTCTGTGCTAACTTTTTCA 918
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     739 GAGTATGGCAATAGAGAATGAGACAATGCAGGTTTAACTTCAGCAGTACAAACTGATTGC 798
                                                                                                                        1.98;
Similarity 49.88;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           nucleic acid
                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2.0%; Score 43.2; DB 1; ilarity 4.8%; Pred. No. 0.053; Conservative 173; Mismatches 126;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               single
                                                                                                           0,
                                                                                                                    Score 40.2; DB Pred. No. 0.31;
                                                                                                       Mismatches
                                                                                                                              DB 4; Length 5361;
                                                                                                       103;
                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 7218;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                   0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                       851
```

뫄 Qy 뫄 Ş 밁 ρy В QΥ 망 ρ 밁 PA 멍

1267

1087 RRRRRRRRRRRRRRRRR 1070

AAAGAGCAGCATGAGGAG 2010

Patent No.

Application US/08232463 5670367

08-232-463-14

GENERAL INFORMATION:

DORNER, F. SCHEIFLINGER, F.

CORRESPONDENCE ADDRESS

NUMBER OF SEQUENCES:

ATTORNEY\_AGENT INFORMATION:
NAME: BENT, Stephen A.
REGISTRATION NUMBER: 29,768
REFERENCE/DOCKET NUMBER: 3047
TELECOMMUNICATION INFORMATION:
TELEPHONE: (703)836-9300

30472/114 IMMU

FILING DATE: APPLICATION 'NUMBER: APPLICATION NUMBER: FILING DATE:

26-AUG-1991

EP 91 114 300.6

US/07/935,313

CLASSIFICATION: 435 PRIOR APPLICATION DATA:

FILING DATE: APPLICATION NUMBER:

US/08/232,463

CURRENT APPLICATION DATA:

PatentIn

COMPUTER READABLE FORM: MEDIUM TYPE: Floppy disk

22313-0299

COUNTRY:

CITY: Alexandria ADDRESSEE:

E: Foley & Lardner 1800 Diagonal Road,

Suite 500

COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS

INFORMATION FOR SEQ ID NO:

TELEFAX:

(703)683-4109

SEQUENCE CHARACTERISTICS:

```
RESULT 5
US-08-487-826B-13/c
                                                                                                                                                                                                                                                                                                                                                                                               Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ; LENGTH: 6152
; TYPE: DNA
; ORGANISM: P. falciparum
US-08-973-462-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT: DRUILHE, PIERRE
APPLICANT: DAUBERSIES, PIERRE
APPLICANT: DAUBERSIES, PIERRE
TITLE OF INVENTION: MALLARIAL PRE-ERYTHROCYTIC ST.
FILE REFERENCE: 0660-0125-0 PCT
CURRENT APPLICATION NUMBER: US/08/973,462B
CURRENT FILING DATE: 1998-02-06
EARLIER APPLICATION NUMBER: PCT/FR96/00894
EARLIER APPLICATION NUMBER: PCT/FR96/00894
EARLIER APPLICATION NUMBER: FR 95/07007
EARLIER FILING DATE: 1996-06-13
NUMBER OF SEQ ID NOS: 29
NUMBER OF SEQ ID NOS: 29
                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 4
US-08-973-462-1/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ρ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                       Patent No.
                                                                                                                                                                                                                                                                       Sequence 13,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match 1.9%;
Best Local Similarity 49.8%;
Matches 102; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SOFTWARE: PatentIn Ver. 2.0 SEQ ID NO 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 1, Application US/08973462B Patent No. 6191270
                                                                                                                                                                                                                                    GENERAL INFORMATION:
                                                                       APPLICANT: Peterson, David S.
APPLICANT: Su, Xin-Zhaun
APPLICANT: Wellems, Thomas E.
TITLE OF INVENTION: BINDING DOMAINS FROM PLASMODIUM VIVAX
TITLE OF INVENTION: AND PLASMODIUM FALCIPARUM ERYTHROCYTE
NUMBER OF SEQUENCES: 45
                                                         CORRESPONDENCE ADDRESS
                                                                                                                                                                                  APPLICANT:
                                                                                                                                                                                                   APPLICANT:
                                                                                                                                                                                                                      APPLICANT:
                                      ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          4168
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                4228
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  3804 TTCTAATTCTTTTAATTTTTCCATA 3780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           3924 ATCTTTTAATTCTACAACTTCATCCAACGTCGTCGTTATATCATGTTCCTCTTCAATAAC 3865
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       912
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  792
                                                                                                                                                                                                                                                       3, Application 5993827
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GTCTTTGACTTTGCGGGTTTCATGGAGCCTGAGTATGATACTCCCCATATTCTGTGCTAAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ATCTTTTAATTCTACAACTTCATCCAACGTCGTCGTTATATCATGTTCCTCTTCAATAAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TAATATATCTTCTTCAAGATCTTTTAAATCAGATACTTTTTCGATCTTGTCTTCTTCGAC 4169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TTCTAATTCTTTAATTTTTCCATA 4024
                                                                                                                                                                                                                                                                                                                                                                                               AGTTATCAGGTCTGTATTGTCCAAA 996
                                                                                                                                                                                                                                                                                                                                                                                                                                  TTTTTCTAATGTATCATCTTTTGCATCTATTATTTCTTTAGAATCTTCTGATAATGCTTT 4049
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TTTTTCACATCTACCAACGTTAACATAGTTGTATTGTAAGTTATCTTCTAGTTATGCTGG 971
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AGTTATCAGGTCTGTATTGTCCAAA 996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TTTTTCTAATGTATCATCTTTTGCATCTATTATTTCTTTAGAATCTTCTGATAATGCTTT 3805
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TTTTTCACATCTACCAACGTTAACATAGTTGTATTGTAAGTTATCTTCTAGTTATGCTGG 971
                    3: Knobbe Martens Olson & Bear 620 Newport Center Drive 16th Floor
                                                                                                                                                                               Chitnis, Chetan
Miller, Louis H.
                                                                                                                                                                                                                    Sim, Kim L.
                                                                                                                                                                                                                                                                         US/08487826B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 40.2; DB 4; Length 6152; Pred. No. 0.33;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Mismatches 103;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       STAGE POLYPEPTIDE MOLECULES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels
                                                                                          BINDING PROTEINS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          911
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       4109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              851
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0
                                                                                                                                                                                                                                                                                                                                                            망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  γ
RESULT 6
US-09-741-150-3/c
                                                                       В
                                                                                                       Ş
                                                                                                                                                                           Ş
                                                                                                                                                                                                                  멍
                                                                                                                                                                                                                                                 Ş
                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                       Ş
                                                                                                                                                                                                                                                                                                                                                                                            Š
                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           뮻
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-08-487-826B-13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Best
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Matches 211;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TELEFAX: (619) 235-0176 INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  REGISTRATION NUMBER: 29,655
REGISTRATION NUMBER: 19,655
REGISTRATION INFORMATION:
TELEPHONE: (619) 235-8550
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/0
FILING DATE: 10-SEP-1993
CLASSIFICATION: 435
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ANTI-SENSE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MOLECULE TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ATTORNEY/AGENT INFORMATION:
NAME: Israelsen, ned
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     COMPUTER READABLE FORM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            STRANDEDNESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STATE: California COUNTRY: US ZIP: 92660
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MEDIUM TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LENGTH:
                                                                       15754
                                                                                                                                                                                                                15874
                                                                                                                                                                                                                                                                                      15934
                                                                                                                                                                                                                                                                                                                                                            15994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             16174
                                                                                                                                            15814
                                                                                                                                                                                                                                                                                                                                                                                                                                16054
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   16114 GTATATATATATATATATATATATATATATATATATGTGTATGTGTAAATGTGTAGTTATGGG 16055
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           894
                                                                                                                                                                                                                                                                                                                                                                                               774
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        654
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          594 AGACTGCTTATATAAGTAAAAGTTCAGATTTTGTTTTTCTAATCACGAAACTGTTTCAGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              nucleic acid
                                                                                                         ACTGTATGTTCTTTT 1030
                                                                                                                                                                                                                                                 CCCATATTCTGTGCTAACTTTTTCACATCTACCAACGTTAACATAGTTGTATTGTAAGTT 953
                                                                                                                                                                                                                                                                                                                                                                                                                               TATATATATATATATATATGTATGTGTAAATGTTGTATGTAGTTATGGGTATATATATAT 15995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TATATATGTATTTAGGTATTATATATGTGTTTGTTAATGTATATATGTATGTAGTTATGG
                                                                                                                                                                                                                                                                                      GTTTGTATCTTCGCTTTAGGTCTTTGACTTTGCGGGTTTCATGGAGCCTGAGTATGATACT
                                                                                                                                                                                                                                                                                                                                                          ATTTTATGATATATT 15738
                                                                                                                                                                           ATCTTCTAGTTATGCTGGAGTTATCAGGTCTGTATTGTCCAAACTGATGTTCAATATTTT 1013
                                                                                                                                                                                                                AACTICAGCAGTACAAACTGATTGCTTTAGTCCCAITTCCTTACTTTCAATTGATTGATT 833
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AATCTTCAAAGATTAGACTCTTGAGGAGTATGGCAATAGAGAATGAGACAATGCAGGTTT 773
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Israelsen, Ned
                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ĕ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1.8%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US/08/487,826B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NIH121.001CP1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 39.4; DB Pred. No. 0.98;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                286;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length 19124;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
```

```
δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           δÃ
밁
                              Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            В
                                                                                                                                  ; TYPE: DNA
; ORGANISM: Pinus taeda
US-08-991-677-11
                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-08-991-677-11/c
                                                                                                 Query Match
                                                                                                                                                                                                                                                                                                                                                                                      GENERAL INFORMATION:
APPLICANT: Chiang, Vincent L
                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 11, Appli
Patent No. 6252135
                                                                 Matches
                                                                                                                                                                                                     SEQ ID NO 11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQ ID NO 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 3, Application US/09741150 Patent No. 6436689
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TITLE OF INVENTION: ISOLATED HUMAN PROTEASE
TITLE OF INVENTION: NUCLEIC ACID MOLECULES
                                                                                                                                                                                                                                                                                       CURRENT APPLICATION NUMBER: US/08/991,677A CURRENT FILING DATE: 1997-12-16
                                                                                                                                                                                                                                                                                                                     APPLICANT: Carraway, Daniel T
APPLICANT: Smeltzer, Richard H
TITLE OF INVENTION: Production of Syringyl Lignin
FILE REFERENCE: 50617
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NUMBER OF SEQ ID NOS:
SOFTWARE: FastSEQ for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CURRENT APPLICATION NUMBER: US/09/741,150
CURRENT FILING DATE: 2000-12-21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TITLE OF INVENTION: NUC
TITLE OF INVENTION: USE
FILE REFERENCE: CL000968
                                                                                                                                                                                                                                   EARLIER FILING DATE: 1996-12-16
NUMBER OF SEQ ID NOS: 11
                                                                                                                                                                                                                       SOFTWARE:
                                                                                                                                                                                                                                                                        CARLIER APPLICATION NUMBER: US
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 OTHER INFORMATION: n = A,T,C or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TYPE: DNA
ORGANISM: Human
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NAME/KEY: misc_feature
LOCATION: (1)...(112132)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FEATURE:
                                                                                                                                                                                    ENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ENGTH: 112132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Local Similarity nes 101; Conserv
                                                                                   Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              66017
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               65957
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            65837 AATCCTTCTTTGCTTAGGATAATTT 65813
                              741 GTATGGCAATAGAGAATGAGACAATGCAGGTTTAACTTCAGCAGTACAAACTGATTGCTT
1.88;
1 Similarity 49.78;
97; Conservation
                                                                                                                                                                                     2251
                                                                                                                                                                                                                   PatentIn
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TAGTCCCATTTCCTTACTTTCAATT 825
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ATAAAGTAATTGAGAATGCAGTGTATTATGAGAAACTTTATAAGGACTGATTATAATAATA 65838
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AGTATCTACCCAGGTTCTTTCTGTTTAATGTAACTTCCTCAAATACTATGTTCTTCAAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ATGGTAAGACCGAACTTCAAATGCTTGCTTTTAAATCTTCAAAGATTAGACTCTTGAGGA 740
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ATTTTGTCTTTTTTTCTAACCAATTTTTCAGGTGACTTCTATGAAAATAATCAGAAACT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ATTTTGTTTTTCTAATCACGAAACTGTTTCAGGAAAAGTATAGTAGCATGACAGGACTAG
                                                                                                                                                                                                                                                                                                                                                                                                                                       Application US/08991677A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      for Windows Version 4.0
                                                                                                                                                                                                                       Ver.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       USES THEREOF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1.8%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0,
                                                                               Score 38.2; DB Pred. No. 0.73;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score 38.6; DB 4; Pred. No. 3.9;
                                                                                                                                                                                                                                                                       60/033,381
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Mismatches
                                                                 Mismatches
                                                                                               DB 4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PROTEINS, ENCODING HUMAN PROTEASE PROTEINS,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  104;
                                                                 98;
                                                                                                                                                                                                                                                                                                                                      in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 112132;
                                                                                               Length 2251;
                                                                 Indels
                                                                                                                                                                                                                                                                                                                                        Gymnosperms
                                                                 0;
                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                680
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             65898
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                65958
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0,
                                                                 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AND
```

5 B

ACCACAAGAATACACCAAATTACTCAATTGCAAG 1163

GATTTACAACAAAAGTTTTATGAAATAATAATGGACATAGAACAAAATAATGTACAAGGG

8543

```
Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT 8
US-08-325-547-9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                QΨ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Š
                                                                                            US-08-325-547-9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 9, Application US/08325547 Patent No. 5736378
                                             Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GENERAL INFORMATION: APPLICANT: Elder,
                                                                                                                                                                                                                                                                            TELEFAX: (619) 455-511
INFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                    PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 0
FILING DATE: 12-SEP-1991
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SOFTWARE: PatentIn Release #1.0, CURRENT APPLICATION DATA:
                                                                                                                                                         FEATURE:
                                                                                                                                                                        IMMEDIATE SOURCE:
CLONE: 34
                                                                                                                                                                                                       MOLECULE TYPE:
                                                                                                                                                                                                                                                                                                                                            TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICANT: Talbott,
                                                                                                                         LOCATION:
                                                                                                                                                                                                                                                                                                                                                            NAME: Wetherell, Jr., Ph.D., REGISTRATION NUMBER: 31,678 REFERENCE/DOCKET NUMBER: PD.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                            LOCATION:
                                                                                                                                                                                                                     TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            COUNTRY:
                                                                                                                                           NAME/KEY:
                                                                                                                                                                                                                                  STRANDEDNESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                          relephone:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ADDRESSEE:
                                                                                                                                                                                                                                                                 ENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1143 ACCAAATTACTCAATTGCAAGTAAACCTAATGCTGAGGTGTAAATGACTGATCTTGAGAT 1202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1203 TTATTTGCAGACTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1083 AGTATTATAACAAGATAATGTCCCATATATCACAAATATGCTGAGGTGACCACAAGAATAC 1142
1070 GATTACCAAGACAAGTATTATAACAAGATAATGTCCATATATCACAAATATGCTGAGGTG 1129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      440
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          380 ATGTTTTCAAAATTT 366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             90067
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Los Angeles
                                                                                                                                                                                                                                               nucleic acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CTTATTAAAACACCCTTATTCCATAAAATAAAAGATACGTTAATTGGATTCGAACTATAA 441
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      California
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    E: Spensley Horn
1880 Century Park
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Elder, John R.
                                  Conservative
                                                                                                                                           CDS
                                                                                                            join(627..1976, 1868..5239, 523
                                                                                                                                                                                                                     linear
                                                                                                                                                                                                                                                                                                                             (619) 455-5100
                                                                                                                                                                                                                                  single
                                                                                                                                                                                                     DNA (genomic)
                                                                                                                                                                                                                                                                                                             455-5110
                                             1.8%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NUCLEOTIDE SEQUENCE AND OPEN READING FRAMES OF FELINE IMMUNODEFICIENCY VI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Randy L.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US/08/325,547
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Park East,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1217
                                                                                                                                                                                                                                                                                                                                                                                           Ph.D., John
                                                                                                                                                                                                                                                                                                                                                                                                                                        07/759,570
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Jubas & Lubitz
                                  0,
                                                                                                                                                                                                                                                                                                                                                            PD-2000
                                             Score 38; DB
Pred. No. 1.7;
                                  Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Version
                                                                                                                                                                                                                                                                                                                                                                                           æ
                                                               DB 1; Length 9472
                                                                                                                           5235..5987, 5991
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   #1.25
                                  35;
                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   VIRUS (FIV)
                                  0;
                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      381
                                  0
```

Gaps

0;

```
US-08-811-682-18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ; LENGTH: 522
; TYPE: DNA
; ORGANISM: Staphylococcus epidermidis
US-09-134-001C-1438
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US-09-134-001C-1438/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQ ID NO 1438
LENGTH: 522
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 1438, Application US/09134001C Patent No. 6380370
                                                                                                                                                                                                                                                                                                                                                                                                                                                        Patent No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CURRENT APPLICATION NUMBER: US/09/134,001C CURRENT FILING DATE: 1998-08-13 PRIOR APPLICATION NUMBER: US 60/064,964
                                                                                                                                                                                                                                                                                                                                                                                                                                       GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT: Lynn Doucette-Stamm et al TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO STAPHYLOCOCCUS TITLE OF INVENTION: EPIDERMIDIS FOR DIAGNOSTICS AND THERAPEUTICS FILE REFERENCE; GTC-007
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NUMBER OF SEQ ID NOS: 5674
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PRIOR APPLICATION NUMBER: US 60/055,779 PRIOR FILING DATE: 1997-08-14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PRIOR FILING DATE: 1997-11-08
                                                                                                                                                                                                                                                                                                                                                                                  APPLICANT:
APPLICANT:
                    CLASSIFICATION: 435
ATTORNEY/AGENT INFORMATION:
NAME: Bennett, Virginia C.
                                                                                                                                                                                                          COMPUTER READABLE FORM:
                                                                                                                                                                                                                                                                                                             CORRESPONDENCE ADDRESS:
ADDRESSEE: Bell Seltzer Park & Gibson
                                                                                                                    CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                    TITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                   NUMBER OF SEQUENCES:
                                                                                                                                                                                                                             STREET: PO L.
STREET: PO L.
CITY: Charlotte
STATE: NO. 6331616th Carolina
                                                                                                                                 MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC COMPATIBLE
OPERATING SYSTEM: PC-TOS/MS-DOS
SOFTWARE: Patentin Release #1.0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Local
                                                                                       FILING DATE:
                REGISTRATION NUMBER:
                                                                                                    APPLICATION NUMBER:
REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         8544 AAAACAGGGATACAACAATTACAAAAGTGGGAAG 8577
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   170 ACTCCAATTATTAAATTTTTAGTATCAATAAAATGGAATTTTAATTCATTAAGCAATATT 111
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             814 TTACTTTCAATTGATTGATTGTTTGTATCTTCGCTTAGGTCTTTGACTTT 863
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  110 AAAATAGACAATGCTATCACAAGTAAAAGTGTCCAAAAAGCACCACTAATTCTCATTACT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  754 GAATGAGACAATGCAGGTTTAACTTCAGCAGTACAAACTGATTGCTTTAGTCCCATTTCC 813
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      694 ACTTCAAATGCTTGCTTTTAAATCTTCAAAGATTAGACTCTTGAGGAGTATGGCAATAGA 753
                                                                                                                                                                                                                                                                                                                                                                                                                                                          18, Application US/08811682
5, 6331616
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              50 TTAATACCGTTTTGATGCATATATTATAAGACTTCATGAGTATCACCTT 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              87;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Similarity
                                                                                                                                                                                                                                                                                                                                                       Yang, Joo-Sung
VENTION: Feline Immunodeficiency Virus Clone
                                                                                                                                                                                                                                                                                                                                                                                                   Tompkins, Wayne A.F. Tompkins, Mary B.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1.7%;
                                                                                                  US/08/811,682
5051-332
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 37.2; DB 4;
Pred. No. 0.67;
0; Mismatches 83;
                                                                                                                               version #1.30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            83;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 522;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  51
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-08-482-090-14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US-08-811-682-18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Patent No.
                                                                                                                                                                                      INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TELEFAX: 919-881-3175
INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT:
APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                             COMPUTER: IBM PC COMPAT
OPERATING SYSTEM: PC-DC
SOFTWARE: PATENTIN Rele
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                       REFERENCE/DOCKET NUMBER: 06
TELECOMMUNICATION INFORMATION:
TELEPHONE: (212)527-7700
TELEFAX: (212)753-6237
                                                                                                                                                                                                                                                                                                           ATTORNEY/AGENT INFORMATION: NAME: Schaffer, Robert
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TELECOMMUNICATION INFORMATION:
TELEPHONE: 919-420-2200
            INDIVIDUAL ISOLATE:
POSITION IN GENOME:
                                                              MOLECULE TYPE:
ORIGINAL SOURCE:
                                                                                                                                                                    SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       COMPUTER READABLE FORM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICANT: Chavez, Lloyd
TITLE OF INVENTION: Recom
TITLE OF INVENTION: Their
TITLE OF INVENTION: Immun
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MOLECULE TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  UMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                              APPLICATION NUMBER: US/0 FILING DATE: 07-JUN-1995 CLASSIFICATION: 424
                                                                                                TOPOLOGY:
                                                                                                                   STRANDEDNESS:
                                                                                                                                                                                                                     TELEFAX:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         COUNTRY: UZIP: 10022
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STRANDEDNESS:
                                               ORGANISM:
                                                                                                                                                  LENGTH:
                                                                                                                                                                                                                                                                                              REGISTRATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MEDIUM TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STREET:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2269
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1130 ACCACAAGAATACACCAAATTACTCAATTGCAAG 1163
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1070 GATTACCAAGACAAGTATTATAAACAAGATAATGTCCATATATCACAAAATATGCTGAGGTG 1129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           14,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        58;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            New York
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            5820869
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           : 2556 base pairs nucleic acid
                                                                                                                          : 3225 base pairs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AAAAAAGGGATACAACAATTACAAAAGTGGGAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GATTTACAACAAAAGTTTTATGAAATAATAATGGACATAGAACAAAATAATGTACAAGGG
                                                                                                                                                                                                          236687
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            New York
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Application US/08482090
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              E: Darby & Darby
805 Third Avenue
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         U.S.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      919-881-3175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                                             linear
                                                                                                                                                                                                                                                                                                                                                                                                               PatentIn Release #1.0, Version #1.30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Chu, Hsien-Jue
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Wasmoen,
                                                                                                                                                                                                                                                                                                                                                                                                                                    IBM PC compatible
SYSTEM: PC-DOS/MS-DOS
                                             feline immunodeficiency virus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Floppy disk
                                                                              DNA (genomic)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DNA (genomic)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             single
                                                                                                               single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Terri
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Their Use
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Immunodeficiency Virus Infection
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Recombinant Raccoon Pox Viruses
                             NCSU-1
                                                                                                                                                                                                                                                                                                                                                                                US/08/482,090
                                                                                                                                                                                                                                                                                         31, 194
                                                                                                                                                                                      14:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Score 36.4; DE Pred. No. 2.5; 0; Mismatches
                                                                                                                                                                                                                                                                            0632/0B170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DB 4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      36;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Vaccine Against Feline
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 2556;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0;
```

```
밁
                                     δÃ
                                                                                                             US-08-481-700B-7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RESULT 12
US-08-481-700B-7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Db:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ; UNITS: bp
US-08-482-090-14
                                                                                            Query Match
                                                                 Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
                                                                                                                                  INDIVIDUAL ISOLATE: NCSU-1
POSITION IN GENOME:
MAP POSITION: 1-3225
UNITS: br
                                                                                                                                                                                                                                                                                                           NFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                              REFERENCE/DOCKET NUMBER: 06
TELECOMMUNICATION INFORMATION:
TELEPHONE: (212)527-7700
                                                                                                                                                                                                                                                                                            SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                        SOFTWARE: Patentin Release #1.0, CURRENT APPLICATION DATA: APPLICATION UMBER: US/08/481,700 FILING DATE: 07-JUN-1995 CLASSIFICATION: 424
                                                                                                                                                                                                                                                                                                                                                                                                                        CLASSIFICATION: 424
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     COMPUTER READABLE FORM: MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICANT: Wasmoen, Terri
APPLICANT: Chu, Hsien-Jue
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FITLE OF INVENTION:
                                                                                                                                                                                                                                                  STRANDEDNESS: single
                                                                                                                                                                                                                                                                                                                                      TELEFAX:
                                                                               Local
                                                                                                                                                                                                                                      TOPOLOGY: linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                           NAME: Schaffer, Robert
REGISTRATION NUMBER: 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STREET:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Local
2237 GATTTACAACCAAAGTTTTATGAAATAATAATGGACATAGAACCAAATAATGTACAAGGG 2296
                1070 GATTACCAAGACAAGTATTATAACAAGATAATGTCCATATATCACAAATATGCTGAGGTG 1129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1130 ACCACAAGAATACACCAAATTÄCTCAATTGCAAG 1163
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1070 GATTACCAAGACAAGTATTATAACAAGATAATGTCCATATATCACAAATATGCTGAGGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2237 GATTTACAACCAAAGTTTTATGAAATAATAATGGACATAGAACCAAATAATGTACAAGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   58;
                                                                             Similarity
                                                                                                                                                                                                                                                                 nucleic acid
                                                                                                                                                                                                                                                                                                                             236687
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    10022
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           New York
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            New York
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Application
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAAACAGGGATACAACAATTACCCAAGTGGGAAG 2330
                                                                                                                                                                                                                                                                          3225 base pairs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       E: Darby & Darby
805 Third Avenue
                                                                                                                                                                                                                                                                                                                                       (212)753-6237
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                U.S.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Floppy disk
                                                                            1.7%;
61.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Feline
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Recombinant Feline Immunodeficiency Vaccines Produced in Baculovirus and Their Use Agsinst
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US/08481700E
                                                                                                                                                                                                                                                                                                                                                                                                                                                                US/08/481,700B
                                                                                                                                                                                                                                                                                                                                                                                             31,194
                                                                      Score 36.4; DI
Pred. No. 2.8;
                                                                                                                                                                                                                                                                                                                                                                               0623/0B168
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Immunodeficiency Virus Infection
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Score 36.4; DI
Pred. No. 2.8;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Version #1.30
                                                                                     DB 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DB 1;
                                                           36;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               36;
                                                                                     Length 3225;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 3225;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                        0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0,
                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2296
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0;
```

```
Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-08-811-682-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ρy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ; ORGANISM: Feline Immunodeficiency Virus US-09-007-383-14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SOFTWARE: Fast
SEQ ID NO 14
LENGTH: 3225
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-09-007-383-14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT 13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence 1, Application US/08811682 Patent No. 6331616 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence 14 Patent No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TITLE OF INVENTION: Recombinant Raccoon Pox Viruses And TITLE OF INVENTION: Their Use As An Effective Vaccine Against Feline TITLE OF INVENTION: Inmunodeficiency Virus Infection FILE REFERENCE: 0632/LB170 US1 CURRENT APPLICATION NUMBER: US/09/007,383A CURRENT FILING DATE: 1998-01-15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     EARLIER FILING DATE: 1995-06-07
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NUMBER OF SEQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT: Wasmoen, Terri
APPLICANT: Chu, Hsien-Jue
APPLICANT: Chavez, Lloyd
         ATTORNEY/AGENT INFORMATION:
NAME: Bennett, Virginia C.
REGISTRATION NUMBER: 37,092
                                                                                                                                               COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM FC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TYPE: DNA
                                                                                                                       SOFTWARE: PatentIn Release #1.0, Version #1.30 CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                           CORRESPONDENCE ADDRESS:
ADDRESSEE: Bell Seltzer Park & Gibson
STREET: PO Drawer 34009
                                                                                                                                                                                                                                                                                                                                                                          APPLICANT: Tompkins, Mary B.
APPLICANT: Yang, Joo-Sung
TITLE OF INVENTION: Feline Immunodeficiency Virus Clone
                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT:
                                                                      FILING DATE:
CLASSIFICATION:
                                                                                                         APPLICATION NUMBER:
                                                                                                                                                                                                                                                              COUNTRY:
                                                                                                                                                                                                                                                                                  STATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1130 ACCACAAGAATACACCAAATTACTCAATTGCAAG 1163
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2237 GATTTACAACCAAAGTTTTATGAAATAATAATGGACATAGAACCAAATAATGTACAAGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1070 GATTACCAAGACAAGTATTATAACAAGATAATGTCCATATATCACAAATATGCTGAGGTG 1129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2297 AAAACAGGGATACAACAATTACCCAAGTGGGAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1130 ACCACAAGAATACACCAAATTACTCAATTGCAAG 1163
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      14, Application US/09007383A
5. 5989562
                                                                                                                                                                                                                                                                    Charlotte
: No. 6331616th Carolina
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     58;
                                                                                                                                                                                                                                             28234
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FastSEQ for Windows Version 3.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAAACAGGGATACAACAATTACCCAAGTGGGAAG 2330
                                                                                                                                                                                                                                                              USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                   Tompkins, Wayne A.F
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ID NOS:
                                                                          435
NUMBER:
                                                                                                       US/08/811,682
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score 36.4;
Pred. No. 2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DB 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               36;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 3225;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
```

TELECOMMUNICATION INFORMATION: TELEPHONE: 919-420-2200

```
RESULT 15
US-08-323-170B-1/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Вþ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          QY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ; NAME/KEY:
; LOCATION:
US-08-811-682-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match 1.7%;
Best Local Similarity 61.7%;
Matches 58; Conservative
                                                                                                                                                                                                                                                                                                                          COUNTRAL
ZIP: 94111-3854
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
MEDIUM TYPE: IBM PC compatible
"""" PC-DOS/MS-DOS
                                                     TELEFAX: (415) 576-030 INFORMATION FOR SEQ ID NO: SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                            APPLICATION NUMBER: US/08/
FILING DATE: 13-CCT-1994
CCLASSIFICATION: 424
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/
FILING DATE: 29-JAN-1993
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TELEFAX: 919-881-31/5
INFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               quence 1, Application US/08323170B
tent No. 5733772
ENERAL INFORMATION:
                                                                                                                                                                                                                                                                                               SOFTWARE: Patentin Release #1.0, Version #1.30 CURRENT APPLICATION DATA: APPLICATION NUMBER: US/08/323,170B
                                                                                                                        NAME: Quine, Jonathan A.

REGISTRATION NUMBER: P-41,261
REFERENCE/DOCKET NUMBER: 015280-113100US
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LOCATION: FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CORRESPONDENCE ADDRESS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MOLECULE TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ITTLE OF INVENTION: falicipar
                                                                                                        TELEPHONE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LENGTH: 9471 base pairs TYPE: nucleic acid STRANDEDNESS: single TOPOLOGY: linear
        STRANDEDNESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NAME/KEY:
                                     LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8537 AAAAAAGGGATACAACAATTACAAAAGTGGGAAG 8570
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    8477 GATTTACAACAAAGTTTTATGAAATAATAATGGACATAGAACAAAATAATGTACAAGGG 8536
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1070 GATTACCAAGACAAGTATTATAAACAAGATAATGTCCATATATCACAAATATGCTGAGGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1130 ACCACAAGAATACACCAAATTACTCAATTGCAAG 1163
H: 9636 base pairs
nucleic acid
DEDNESS: single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            San Francisco
                                                                                                                                                                                                                                                                                                                                                                                                                                                          California
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        E: Townsend and Townsend and Crew LLP Two Embarcadero Center, 8th Floor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CDS
631..1980
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CDS
6269..8824
                                                                                                           (415) 576-0200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DNA (genomic)
                                                                                        576-0300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Cloning and faliciparum
                                                                                                                                                                                                                                US 08/010,409
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 36.4; DB 4; Pred. No. 4.7; 0; Mismatches 36;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Expression of Plasmodium Transmission-Blocking Target Antigen, Pfs230
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            36;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 9471;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0
```

```
Search completed: June 24, 2003, 14:18:34 Job time: 82 secs
                                                                    밁
                                                                                                  δã
                                                                                                                                    밁
                                                                                                                                                                Ş
                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                         ; NAME/KEY: CDS
; LOCATION: 149..9556
US-08-323-170B-1
                                                                                                                                                                                                                                                                                      Query Match
Best Local S
                                                                                                                                                                                                                                                                        Matches
                                                                                                                                                                                                                                                                                                                                                                                          MOLECULE TYPE: DNA (genomic) FEATURE:
                                                                                                                                                                                                                                                                   y Match 1.7%;
Local Similarity 50.9%;
hes 86; Conservative
                                                                  7628
                                                                                                                                    7688
                                                                                                                                                                   1079 GACAAGTATTATAACAAGATAATGTCCATATATCACAAATATGCTGAGGTGACCACAAGA 1138
                                                                                                                                                                                                   7748 ATGTTTTTTTGTAGGATCTATATAAGTAACAAAATTTTTCTTATCAAAAGTAATCACAA 7689
                                                                                                                                                                                                                                 TTGTATGAGGACATTTAATTGTAACAACATCTAATGCTTTTGCATTAAT 7580
                                                                                                  ATACACCAAATTACTCAATTGCAAGTAAACCTAATGCTGAGGTGTAAAT 1187
                                                                                                                                    TTTTTTTATCATTAGTTATTAATGAAGAATTAGGAAAATAATCTTTAGGCGTAAAATTTT 7629
                                                                                                                                                                                                                                                                                      Score 36.2; D
Pred. No. 5.4;
                                                                                                                                                                                                                                                                      Mismatches
                                                                                                                                                                                                                                                                                                      DB 1;
                                                                                                                                                                                                                                                                        83;
                                                                                                                                                                                                                                                                                                        Length 9636;
                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                      0;
                                                                                                                                                                                                                                                                      Gaps
```

• .. • 

```
Result
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Minimum DB
Maximum DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          OM protein -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Post-processing: Minimum Match 0%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            on :
Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                          1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
1110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110.5
110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              seq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              length:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Issued_Patents_AA:*
1: /cgn2_6/ptodata/1,
2: /cgn2_6/ptodata/1,
3: /cgn2_6/ptodata/1,
4: /cgn2_6/ptodata/1,
5: /cgn2_6/ptodata/1,
6: /cgn2_6/ptodata/1,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      BLOSUM62
Gapop 10.0 ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-09-870-406A-33
1724
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     June 24, 2003, 18:35:35; Search time 23 Seconds
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     262574 seqs,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Maximum Match 100%
ႷႷႷႷႷႴႴႻႯႣႣႣႣႣႣႣႣႣႣႣႣႣႣႣႣႣႣႣ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MALSMEFGFSIGSCFKAPNP......
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GenCore version Copyright (c) 1993 - 2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /cgn2_6/ptodata/1/iaa/5A_COMB.pep:*
/cgn2_6/ptodata/1/iaa/5B_COMB.pep:*
/cgn2_6/ptodata/1/iaa/6A_COMB.pep:*
/cgn2_6/ptodata/1/iaa/6B_COMB.pep:*
/cgn2_6/ptodata/1/iaa/B_COMB.pep:*
/cgn2_6/ptodata/1/iaa/PCTUS_COMB.pep:*
/cgn2_6/ptodata/1/iaa/backfiles1.pep:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           29422922 residues
                                                 4 US-09-182-859-6
4 US-09-264-097-8
4 US-09-672-459-6
4 US-09-672-459-6
4 US-09-537-168-8
1 US-08-720-899-6
1 US-08-683-838A-6
2 US-08-683-838A-6
2 US-08-683-838A-6
3 US-08-683-838A-6
4 US-09-636-252A-6
4 US-08-468-700-37
1 US-08-468-700-37
1 US-08-468-700-35
2 US-08-468-700-35
2 US-08-468-70-35
3 US-08-914-679A-6
4 US-08-914-679A-6
4 US-08-914-679A-6
5 US-08-914-664A-35
8 US-08-194-664A-35
9 US-08-194-664A-35
9 US-08-194-664A-35
9 US-08-194-664A-35
9 US-08-194-664A-35
9 US-08-194-664A-35
9 US-08-194-664A-35
9 US-08-194-664A-35
9 US-08-194-664A-35
9 US-08-194-664A-35
9 US-08-194-664A-35
9 US-08-194-664A-35
9 US-08-194-664A-35
9 US-08-194-664A-35
9 US-08-194-664A-35
9 US-08-194-664A-35
9 US-08-194-664A-35
9 US-08-194-664A-35
9 US-08-194-664A-35
9 US-08-194-664A-35
9 US-08-194-664A-35
9 US-08-194-664A-35
9 US-08-194-664A-35
9 US-08-194-664A-35
9 US-08-194-664A-35
9 US-08-194-664A-35
9 US-08-194-664A-35
9 US-08-194-664A-35
9 US-08-194-664A-35
9 US-08-194-664A-35
9 US-08-194-664A-35
9 US-08-194-664A-35
9 US-08-194-664A-35
9 US-08-194-664A-35
9 US-08-194-664A-35
9 US-08-194-664A-35
9 US-08-194-664A-35
9 US-08-194-664A-35
9 US-08-194-664A-35
9 US-08-194-664A-35
9 US-08-194-664A-35
9 US-08-194-664A-35
9 US-08-194-664A-35
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (without alignments)
420.876 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        5.1.6
Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SIIGKSYETRPWDLTGQFIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             262574
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Description
                      sequence
sequence
sequence
sequence
sequence
sequence
sequence
                                                                                                                                                                                                                                        Sequence
Sequence
Sequence
Sequence
Sequence
Sequence
Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence
Sequence
Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence
Sequence
Sequence
Sequence
Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence
Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence
Sequence
                                                                                 8, Appli
6, Appli
6, Appli
6, Appli
6, Appli
6, Appli
6, Appli
37, Appli
35, Appli
35, Appli
35, Appli
35, Appli
35, Appli
35, Appli
37, Appli
38, Appli
38, Appli
39, Appli
39, Appli
39, Appli
31, Appli
31, Appli
32, Appli
33, Appli
34, Appli
35, Appli
36, Appli
37, Appli
38, Appli
39, Appli
39, Appli
31, Appli
31, Appli
31, Appli
32, Appli
33, Appli
34, Appli
35, Appli
36, Appli
37, Appli
38, Appli
39, Appli
39, Appli
39, Appli
31, Appli
31, Appli
31, Appli
32, Appli
33, Appli
34, Appli
35, Appli
36, Appli
37, Appli
38, Appli
39, Appli
39, Appli
31, Appli
31, Appli
31, Appli
31, Appli
32, Appli
33, Appli
34, Appli
35, Appli
36, Appli
37, Appli
38, Appli
39, Appli
39, Appli
30, Appli
30, Appli
31, Appli
31, Appli
32, Appli
33, Appli
34, Appli
35, Appli
36, Appli
37, Appli
38, Appli
39, Appli
30,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      œ ψ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Appli
Appli
Appli
Appli
                      Appl
Appl
                                                                                                                                            Qy
                                                                                                                                                                                                                                                                                                                                   밁
                                                                                    밁
                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                           δÃ
                                                                                                                                                                                                                                                                                                                                                                                              Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Matches
```

ĕ

45	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28
82	82	84	84	84.5	85	85	85	85.5	87	87	87.5	88.5	88.5	88.5	88.5	88.5	88.5
4.8	4.8	4	4	4	4.9	4.9	4.9	5.0	5.0	5.0	5.1	5.1	5.1	5.1	5.1	5.1	5.1
906	502	464	425	636	748	748	748	386	1168	1168	956	573	514	514	514	514	514
ω	4	4	ب	4	4	H		2	4	Н	4	4	4	4	4	4	4
US-08-630-916A-48	US-09-134-001C-4511	US-08-970-134-3	US-08-615-170-17	US-09-564-805-237	US-09-087-465-8	US-08-839-164-2	US-08-408-318-2	us-08-968-751-6	US-08-961-803-8	US-08-448-170-6	US-09-134-001C-4452	US-09-134-001C-4813	US-09-290-734-3	US-09-354-191A-3	US-09-183-412-3	US-09-193-068-3	US-09-170-670-3
	Sequence	Sequence	Sequence		Sequence	Sequence	Sequence	Sequence	Sequence	Sequence	Sequence	Sequence	Sequence	Sequence	Sequence	Sequence	Sequence
48, Appl	4511, Ap	3, Appli	17, Appl	237, App	8, Appli	2, Appli	<ol><li>Appli</li></ol>	6, Appli	8, Appli	6, Appli	4452, Ap	4813, Ap	3, Appli	3, Appli	<ol> <li>Appli</li> </ol>	3, Appli	3, Appli

## ALIGNMENTS

```
GENERAL INFORMATION:

APPLICANT: Svendsen, Allan

APPLICANT: Borchert, Torben

APPLICANT: Blsgard-Frantzen, Henrik

TITLE OF INVENTION: Alpha-amylase Mutants

FILE REFERENCE: 4796.204-US

CURRENT APPLICATION UNMBER: US/09/182,859

CURRENT FILING DATE: 1998-10-29

EARLIER APPLICATION NUMBER: 0515/96

EARLIER FILING DATE: 1996-04-30

EARLIER FILING DATE: 1996-04-30

EARLIER FILING DATE: 1996-07-12/96

EARLIER APPLICATION NUMBER: 0775/96

EARLIER APPLICATION NUMBER: 0775/96

EARLIER APPLICATION NUMBER: 1263/96

EARLIER APPLICATION NUMBER: 1263/96

EARLIER FILING DATE: 1996-11-08

NUMBER OF SEQ ID NOS: 37
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ; TYPE: PRT ; ORGANISM: Bacillus stearothermophilus US-09-182-859-6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RESULT 1
US-09-182-859-6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQ ID NO 6
LENGTH: 514
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence 6, Application Patent No. 6143708
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SOFTWARE: FastSEQ for Windows Version
                         245
                                                                                                                         187
                                                                                                                                                                          292
                                                                                                                                                                                                                      160
                                                                                                                                                                                                                                                                                                                                                                      195 NYDYLMYADLDMDHPEVVTELKNWGKWYVNTTNIDG------FRLDAVKH 238
                                                                                                                                                                                                                                                                                                                                                                                                     50 SYKEFAESALEETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIEN 109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        68;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Similarity
-QHKYLT-----WRAQ---KDPGHGLLKRL------VGEAKAKELLRDFLFNGV
                                                                                                                                                                                                                                                                       IKFSFFPDWLSYVRSQTGKPLFTVGEYWS-----YDINKLHNYITKTDGTMSLFDAPL
                                                                        ----FKPLA-YAFILTRQEGYPCVF--YGDYYGIPQYNIPSLKSKIDPLLIARRDYAYG
                                                                                                                                                                     HNKFYTASKSGGAFDMRTLMTNTLMKDQPTLAVTFVDNHDTEPGQALQSWVDPW-----
                                                                                                                                                                                                                   QDKYY-----PWGGKLTG
                                                                                                                                                                                                                                                                                                                     ETMQVF-DFAGFMEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTD-----Y
                                                                                                    ESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRANCEA--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             6.4%; Score 110.5; DB 4; 19.4%; Pred. No. 0.0027;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US/09182859
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   50;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   <u>.</u>.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        120;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length 514;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels 113;
```

Gaps

244 345

```
US-09-672-459-6
                                                                                                                                                                                                                                                                                                                                                    δõ
                                                                                                                                                                                                                                                                                                                                                                                                  ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                      Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Б
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ; TYPE: PRT; ORGANISM: Bacillus US-09-264-097-8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 γ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CURRENT APPLICATION NUMBER: US/09/264,097
CURRENT FILING DATE: 1999-03-08
EARLIER APPLICATION NUMBER: PA 0321/98
EARLIER FILING DATE: 1998-03-09
EARLIER APPLICATION NUMBER: 60/079,209
EARLIER FILING DATE: 1998-03-24
NUMBER OF SEQ ID NOS: 8
SOFTMARE: FastSEQ for Windows Version 3.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RESULT 2
US-09-264-097-8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                         Sequence 6, Application US/09672459 Patent No. 6436888 GENERAL INFORMATION:
                           APPLICANT: Svendsen, Allan
APPLICANT: Borchert, Torben
APPLICANT: Bisgard-Frantzen, Henrik
TITLE OF INVENTION: Alpha-Amylase Mutants
FILE REFERENCE: 4796,204-US
CURRENT APPLICATION NUMBER: US/09/672,459
CURRENT FILING DATE: 2000-09-28
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GENERAL INFORMATION:
APPLICANT: No. 6287826man, Barrie
APPLICANT: Hendriksen, Hanne Vang
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQ ID NO 8
              PRIOR APPLICATION NUMBER: 09/182,859
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence 8, Application US/09264097 Patent No. 6287826
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TITLE OF INVENTION: Enzymatic Preparation of Glucose Syrup TITLE OF INVENTION: From Starch FILE REFERENCE: 5278.200-US
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LENGTH: 514
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  346
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  292 HNKFYTASKSGGAFDMRTLMTNTLMKDQPTLAVTFVDNHDTEPGQALQSWVDPW-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  239 IKFSFFPDWLSYVRSQTGKPLFTVGEYWS-----YDINKLHNYITKTDGTMSLFDAPL 291
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        110 ETMQVF-DFAGFMEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTD------Y 159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    195 NYDYLMYADLDMDHPEVVTELKNWGKWYVNTTNIDG--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    50 SYKEFAESALEETRKRIYLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIEN 109
                                                                                                                                                                                                                                                                                                                                               DELGTKTFIDYFPEYQTEDGTVS-----DKRSIIGKSYETRPWDLTGQFI 328
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Similarity
                                                                                                                                                                                                                                                                                                           DTVTINS--DGWGEFKVNGGSVSVWVPRKTTVSTIARPITTRPW--TGEFV 504
                                                                                                                                                                                                                                                                                                                                                                                     TOHDYLDHSDIIGWTREGGTEKPGSGLAALITDGPGGSKWMYVGKQHAGKVFYDLTGNRS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRANCEA--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ----FKPLA-YAFILTRQEGYPCVF--YGDYYGIPQYNIPSLKSKIDPLLIARRDYAYG
                                                                                                                                                                                                                                                                                                                                                                                                                                  -QHKYLT-----WRAQ---KDPGHGLLKRL-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DELGTKTFIDYFPEYQTEDGTVS-----DKRSIIGKSYETRPWDLTGQFI 328
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DTVTINS--DGWGEFKVNGGSVSVWVPRKTTVSTIARPITTRPW--TGEFV 504
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TQHDYLDHSDIIGWTREGGTEKPGSGLAALITDGPGGSKWMYVGKQHAGKVFYDLTGNRS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        6.48;
19.48;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Barrie Edmund
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     50;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 110.5; DB
Pred. No. 0.0027;
50; Mismatches 12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  --NKIMSIYHKYAETF----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DB 4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 514;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels 113;
                                                                                                                                                                                                                                                                                                                                                                                                                                -VGEAKAKELLRDFLFNGV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ----FRLDAVKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ----PWGGKLTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                              283
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    345
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   457
                                                                                                                                                                                                                                                                                                                                     GENERAL INFORMATION:

APPLICANT: Outtrup, Helle
APPLICANT: Borchert, Torben
APPLICANT: Nielsen, Bjarne
APPLICANT: Nielsen, Vibeke
APPLICANT: Hoeck, Lisbeth
                                                               ; ORGANISM: Bacillus US-09-291-023A-17
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-09-291-023A-17
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ωy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                멂
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ъ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-09-672-459-6
                                                                                                                      SEQ ID NO 17
LENGTH: 515
Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence 17, Application US/09291023A Patent No. 6309871
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQ ID NO 6
                                                                                                                                                              NUMBER OF SEQ ID NOS:
SOFTWARE: PatentIn ve
                                                                                                                                                                                                    CURRENT APPLICATION NUMBER: US/09/291,023A
CURRENT FILING DATE: 1999-04-13
PRIOR APPLICATION NUMBER: DK 1999 00438
PRIOR FILING DATE: 1999-03-31
                                                                                                                                                                                                                                                                            TITLE OF INVENTION: Polypeptides Having Alkaline Alpha-amylase Activity And Nuclei TITLE OF INVENTION: Encoding Same FILE REFERENCE: 5821.010-US
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRIOR FILING DATE: 1996-06-28
PRIOR APPLICATION NUMBER: 077:
PRIOR FILING DATE: 1996-07-11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PRIOR FILING DATE: 1998-10-29
PRIOR APPLICATION NUMBER: 0515/96
PRIOR FILING DATE: 1996-04-30
PRIOR APPLICATION NUMBER: 0712/96
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NUMBER OF SEQ ID NOS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PRIOR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ILENGTH: 514
TYPE: PRT
ORGANISM: Bacillus stearothermophilus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SOFTWARE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRIOR FILING DATE: 1996-11-08
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICATION NUMBER: 1263/96
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    346
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        398
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          458
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     284 DELGTKTFIDYFPEYQTEDGTVS-----DKRSIIGKSYETRPWDLTGQFI 328
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    292
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      195 NYDYLMYADLDMDHPEVVTELKNWGKWYVNTTNIDG------FRLDAVKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    160 QDKYY------NKIMSIYHKYAETF------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      239 IKFSFFPDWLSYVRSQTGKPLFTVGEYWS-----YDINKLHNYITKTDGTMSLFDAPL 291
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     50
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1 Similarity
68; Conser
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FastSEQ for Windows Version
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DTVTINS--DGWGEFKVNGGSVSVWVPRKTTVSTIARPITTRPW--TGEFV 504
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ----FKPLA-YAFILTRQEGYPCVF--YGDYYGIPQYNIPSLKSKIDPLLIARRDYAYG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ETMQVF-DFAGFMEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTD------Y 159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TQHDYLDHSDIIGWTREGGTEKPGSGLAALITDGPGGSKWMYVGKQHAGKVFYDLTGNRS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRANCEA--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            HNKFYTASKSGGAFDMRTLMTNTLMKDQPTLAVTFVDNHDTEPGQALQSWVDPW-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SYKEFAESALEETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIEN 109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      -QHKYLT-----WRAQ---KDPGHGLLKRL------VGEAKAKELLRDFLFNGV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                version 3.0
  6.4%;
19.4%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      6.4%; Score 110.5; DB 4; 19.4%; Pred. No. 0.0027; tive 50; Mismatches 120;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0775/96
  Score
Pred.
  110.
No.
  .5; DB 4;
0.0027;
```

Indels Length

Gaps

PWGGKLTG

186

244 345

283 397

457

514; 113;

Length 515;

457

```
밁
                                              QY
                                                                                  В
                                                                                                             δÃ
                                                                                                                                            В
                                                                                                                                                                             ρy
                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                ρy
                                                                                                                                                                                                                                                                                                                                                     ; LENGTH: 515
; TYPE: PRT
; ORGANISM: Bacillus
US-09-537-168-8
                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT: Svendsen, Allan
APPLICANT: Kjeerulff, Soren
TITLE OF INVENTION: Alpha-Amylase Variants
FILE REFERENCE: 5886.200-US
CURRENT APPLICATION NUMBER: US/09/537,168
CURRENT FILING DATE: 2000-03-29
EARLIER APPLICATION NUMBER: PA 1999 00437
EARLIER FILING DATE: 1999-03-30
EARLIER APPLICATION NUMBER: 60/127,427
EARLIER APPLICATION NUMBER: 60/127,427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RESULT 5
US-09-537-168-8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DЬ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT: Andersen, Carsten
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence 8, Application US/09537168 Patent No. 6410295
                                                                                                                                                                                                                                                                                                                 Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                    SEQ ID NO 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Matches
                                                                                                                                                                                                                                                                                       Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                     SOFTWARE: FastSEQ for
                                                                                                                                                                                                                                                                                                                                                                                                                                                   NUMBER OF SEQ ID NOS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT: Jorgensen, Christel T.
                                                                                                                                                                                                                                                                                                 Local
                                                                                                                                                   239
                                                                                                                                                                                    110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    284
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    398
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    346
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     292
                                                     187
                                                                                                                                                                                                                    195
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   239 IKFSFFPDWLSYVRSQTGKPLFTVGEYWS-----YDINKLHNYITKTDGTMSLFDAPL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       195
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  110 ETMQVF-DFAGFMEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTD------Y
                                                                                                                                                                                                                                                   50
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    50
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       68;
                                                                                                                                                                                                                                                                                     68;
                                                                                                                                                                                                                                                                                                     Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DELGTKTFIDYFPEYQTEDGTVS-----DKRSIIGKSYETRPWDLTGQFI 328
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  HNKFYTASKSGGAFDMRTLMTNTLMKDQPTLAVTFVDNHDTEPGQALQSWVDPW-----
                                                                                                                                                                                                                                            SYKEFAESALEETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIEN
                                                                                                                                                 IKFSFFPDWLSYVRSQTGKPLFTVGEYWS-----YDINKLHNYITKTDGTMSLFDAPL
                                                                                                                                                                                                                 NYDYLMYADLDMDHPEVVTELKNWGKWYVNTTNIDG-----FRLDAVKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Bisgard-Frantzen, Henrik
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NYDYLMYADLDMDHPEVVTELKNWGKWYVNTTNIDG---
                                                 ESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRANCEA--
                                                                                                                 QDKYY------NKIMSIYHKYAETF-----
                                                                                                                                                                                ETMQVF-DFAGFMEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTD-----Y
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DTVTINS--DGWGEFKVNGGSVSVWVPRKTTVSTIARPITTRPW--TGEFV 504
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TQHDYLDHSDIIGWTREGGTEKPGSGLAALITDGPGGSKWMYVGKQHAGKVFYDLTGNRS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRANCEA--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SYKEFAESALEETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIEN
                                                                                  HNKFYTASKSGGAFDMRTLMTNTLMKDQPTLAVTFVDNHDTEPGQALQSWVDPW-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 -QHKYLT-----WRAQ---KDPGHGLLKRL------VGEAKAKELLRDFLFNGV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ----FKPLA-YAFILTRQEGYPCVF--YGDYYGIPQYNIPSLKSKIDPLLIARRDYAYG
                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Conservative
                 -FKPLA-YAFILTRQEGYPCVF--YGDYYGIPQYNIPSLKSKIDPLLIARRDYAYG
                                                                                                                                                                                                                                                                                                                                                                  stearothermophilus
                                                                                                                                                                                                                                                                                                 19.48;
                                                                                                                                                                                                                                                                                                                                                                                                                                  Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    50;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       50;
                                                                                                                                                                                                                                                                                Score 110.5; DB 4;
Pred. No. 0.0027;
50; Mismatches 120;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     120;
                                                                                                                                                                                                                                                                                                                 Length 515;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                  Indels 113;
                                                                                                                  -----PWGGKLTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ----FRLDAVKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     113;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                  Gaps
                                                 244
                                                                                                                                                 291
                                                                                                                                                                                                                  238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    457
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    291
                                                                                  345
                                                                                                                                                                                  159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   283
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  397
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   345
                 Ş
                                                 B
                                                                              Qy
                                                                                                                 밁
                                                                                                                                            Q
                                                                                                                                                                                밁
                                                                                                                                                                                                               Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RESULT 6
US-08-720-899-6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Q
                                                                                                                                                                                                                                                                                                                 ; MOLECULE TYPE: US-08-720-899-6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence be Patent No.
                                                                                                                                                                                                                                                                                Query Match
                                                                                                                                                                                                                                                 Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GENERAL
                                                                                                                                                                                                                                                                                                                                                                                                                  TELEFAX: 212-878-9655
INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICANT:
APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FILING DATE: 22-NOV-1994
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CLASSIFICATION: 435
PRIOR APPLICATION NUMBER: 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SOFTWARE: Patentin Rel
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT: Van der Zee, Pia
TITLE OF INVENTION: AMYLASE VARIANTS
NUMBER OF SEQUENCES: 38
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CORRESPONDENCE ADDRESS
                                                                                                                                                                                                                                                                                                                                                        TYPE: amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           REFERENCE/DOCKET NUMBER: 40
                                                                                                                                                                                                                                                                                                                                                 TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                TELEPHONE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NAME: Lowney Dr., Karen A. REGISTRATION NUMBER: 31,27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICATION NUMBER: US/01 FILING DATE: 10-OCT-1996
                                                                                                                                                                                                                                                                  Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       458
                 187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  6, Application
5, 5753460
                                                                                                                                                                                                                 50
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    INFORMATION:
                                                                                                                                                                                                                                                 68;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     10174-6401
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   New York
ESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEWTIQVREEMEPSHVRANCEA--
                                                                                                             IKESFEPDWLSYVRSQTGKPLFTVGEYWS-----YDINKLHNYITKTDGTMSLFDAPL 325
                                                                                                                                              ETMOVF-DFAGFMEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTD------Y 159
                                                                                                                                                                                                                 SYKEFAESALEETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIEN 109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DELGTKTFIDYFPEYQTEDGTVS-----DKRSIIGKSYETRPWDLTGQFI 328
                                                 HNKFYTASKSGGAFDMRTLMTNTLMKDQPTLAVTFVDNHDTEPGQALQSWVDPW-----
                                                                                                                                                                                NYDYLMYADLDMDHPEVVTELKNWGKWYVNTTNIDG ---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DTVTINS--DGWGEFKVNGGSVSVWVPRKTTVSTIARPITTRPW--TGEFV 504
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TQHDYLDHSDIIGWTREGGTEKPGSGLAALITDGPGGSKWMYVGKQHAGKVFYDLTGNRS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  -QHKYLT-----WRAQ---KDPGHGLLKRL------VGEAKAKELLRDFLFNGV 283
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    New York
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               405 Lexington Avenue,
                                                                                                                                                                                                                                                                                                                                                                                549 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Borchert, Torben Vedel
Svendsen, Allan
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Thellersen, Marianne
                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Bisgaard-Frantzen, Henrik
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   No. 57534600 No. 5753460d1sk of 5 Lexington Avenue, 64th Floor
                                                                                                                                                                                                                                                                                                                                                                                                                                                   212-867-0123
                                                                                                                                                                                                                                                                                                                              protein
                                                                                                                                                                                                                                                                 6.4%;
19.4%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   us/08720899
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Release #1.0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US 08/343,804
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US/08/720,899
                                                                                                                                                                                                                                                                                                                                                                                                                  6.
                                                                                                                                                                                                                                                 50;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  4054
                                                                                  --NKIMSIYHKYAETF----
                                                                                                                                                                                                                                                                  Pred. No.
                                                                                                                                                                                                                                                                                Score 110.5;
                                                                                                                                                                                                                                                Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Version #1.30
                                                                                                                                                                                                                                                                  0.003
                                                                                                                                                                                                                                                                              DB 1;
                                                                                                                                                                                                                                                 120;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  No. 5753460th America,
                                                                                                                                                                                                                                                 Indels 113;
                                                                                                                                                                                                                                                                                Length 549;
                                                                                                                                                                                -----FRLDAVKH
                                                                                  -PWGGKLTG 186
                                                                                                                                                                                                                                                 Gaps
```

379

244

밁 Q γQ

B

380

밁

```
US-08-459-610-6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US-08-459-610-6
                                                                                                                                                                                                                                                  Matches
                                                                                                                                                                                                                                                                                   Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 6 Patent No.
                                                                                                                                                                                                                                                                                                                                                                                   TELEFAX: 212-878-9655
INFORMATION FOR SEQ ID NO: (
SEQUENCE CHARACTERISTICS:
LENGTH: 549 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICATION NUMBER: US/08
FILING DATE: 02-JUN-1995
CLASSIFICATION: 435
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08,
FILING DATE: 22-NOV-1994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                  TOPOLOGY: 11 MOLECULE TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        REFERENCE/DOCKET NUMBER: 4054.214-US TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FILING DATE: 22-NOV-1994
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CORRESPONDENCE ADDRESS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT: Van der Zee, Pia
TITLE OF INVENTION: AMYLASE VARIANTS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICANT:
                                                                                                                                                                                                                                                               Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                        TELEPHONE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NAME: Lowney Dr., Karen A. REGISTRATION NUMBER: 31,27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CITY: New York
STATE: New York
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SOFTWARE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ADDRESSEE:
                            326 HNKFYTASKSGGAFDMRTLMTNTLMKDQPTLAVTFVDNHDTEPGQALQSWVDPW-----
                                                                                                                              110 ETMQVF-DFAGFMEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTD-------Y 159
                                                                                                                                                                      229 NYDYLMYADLDMDHPEVVTELKNWGKWYVNTTNIDG--
                                                                        160 QDKYY--
                                                                                                                                                                                                 50 SYKEFAESALEETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIEN 109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           284 DELGTKTFIDYFPEYQTEDGTVS-----DKRSIIGKSYETRPWDLTGQFI 328
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     492
                                                                                                                                                                                                                                                  68;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      10174-6401
                                                                                              IKFSFFPDWLSYVRSQTGKPLFTVGEYWS-----YDINKLHNYITKTDGTMSLFDAPL 325
                                                                                                                                                                                                                                                                                                                                                                      amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DTVTINS--DGWGEFKVNGGSVSVWVPRKTTVSTIARPITTRPW--TGEFV 538
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TQHDYLDHSDIIGWTREGGTEKPGSGLAALITDGPGGSKWMYVGKQHAGKVFYDLTGNRS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            -OHKYLT-----WRAQ---KDPGHGLLKRL------VGEAKAKELLRDFLFNGV 283
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Application US/08459610
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ----FKPLA-YAFILTRQEGYPCVF--YGDYYGIPQYNIPSLKSKIDPLLIARRDYAYG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                405 Lexington Avenue,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Svendsen, Allan
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PatentIn
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Thellersen, Marianne
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Bisgaard-Frantzen, Henrik
                                                                                                                                                                                                                                                                                                                                                      linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                      212-867-0123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            No. 58010430 No. 5801043d1sk of No. 5801043th America, Lexington Avenue, 64th Floor
                                                                                                                                                                                                                                                                                                                                  protein
                                                                                                                                                                                                                                                               19.48;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US 08/343,804
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Release #1.0, Version #1.30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US/08/459,610
                                                                                                                                                                                                                                                                                                                                                                                                                       6:
                                                                                                                                                                                                                                             50;
                                                                                                                                                                                                                                     Score 110.5; DB 1,
Pred. No. 0.003;
"" ematches 120;
                                                                   -NKIMSIYHKYAETF----
                                                                                                                                                                                                                                                                          Length 549;
                                                                                                                                                                                                                                       Indels 113;
                                                               -----PWGGKLTG 186
                                                                                                                                                                    ----FRLDAVKH 272
                                                                                                                                                                                                                                       Gaps
                                379
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Inc.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               491
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                431
                                             뭥
                                                                            δÃ
                                                                                                              В
          δÃ
                                                                                                                                             Ş
                                                                                                                                                                                   맑
                                                                                                                                                                                                                  Qy
                                                                                                                                                                                                                                                                                                                         ; MOLECULE TYPE: US-08-343-804-6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RESULT 8
US-08-343-804-6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Дb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ъ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ρy
                                                                                                                                                                                                                                                    Query Match
Best Local S
Matches 68
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Patent No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence 6,
                                                                                                                                                                                                                                                                                                                                                                                                                           TELEFAX: 212-878-9655
INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ZIP: 10174-6401
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICATION NUMBER: US/O
FILING DATE: 22-NOY-1994
CLASSIFICATION: 435
ATTORNEY/AGENT INFORMATION:
NAME: Lowney Dr., Karen
                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           REFERENCE/DOCKET NUMBER: 40
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CORRESPONDENCE ADDRESS:
ADDRESSE: No. 58308370 No. 5830837disk of No. 5830837th America, Inc.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                          TYPE: a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release "1"
                                                                                                                                                                                                                                                                                                                                                         TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                             TELEPHONE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              REGISTRATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         COUNTRY:
                                    326 HNKFYTASKSGGAFDMRTLMTNTLMKDQPTLAVTFVDNHDTEPGQALQSWVDPW------
187 ESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRANCEA--
                                                                             160
                                                                                                     273 IKESFEPDWLSYVRSQTGKPLFTVGEYWS-----YDINKLHNYITKTDGTMSLFDAPL 325
                                                                                                                                               110
                                                                                                                                                                                 229
                                                                                                                                                                                                         50 SYKEFAESALEETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIEN 109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         432
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            380
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               492 DTVTINS--DGWGEFKVNGGSVSVWVPRKTTVSTIARPITTRPW--TGEFV 538
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             187
                                                                                                                                                                                                                                                      ;83
                                                                                                                                                                                                                                                                  Similarity
                                                                                                                                      ETMQVF-DFAGFMEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTD------Y 159
                                                                                                                                                                                                                                                                                                                                                                        amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    , Application US/08343804
5830837
                                                                                                                                                                            NYDYLMYADLDMDHPEVVTELKNWGKWYVNTTNIDG----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DELGTKTFIDYFPEYQTEDGTVS-----DKRSIIGKSYETRPWDLTGQFI 328
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TQHDYLDHSDIIGWTREGGTEKPGSGLAALITDGPGGSKWMYVGKQHAGKVFYDLTGNRS 491
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ESIKEFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRANCEA--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 -QHKYLT-----WRAQ---KDPGHGLLKRL------VGEAKAKELLRDFLFNGV 283
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   -----FKPLA-YAFILTRQEGYPCVF--YGDYYGIPQYNIPSLKSKIDPLLIARRDYAYG 431
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         New York
                                                                                                                                                                                                                                                                                                                                                                                      549 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         USA.
                                                                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Van der Zee, Pia
VENTION: AMYLASE VARIANTS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Svendsen, Allan
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PatentIn Release #1.0,
                                                                                                                                                                                                                                                                                                                                                         linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Thellersen, Marianne
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Bisgaard-Frantzen,
                                                                                                                                                                                                                                                                                                                                                                                                                                                           212-867-0123
                                                                                                                                                                                                                                                                  6.48;
19.48;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Karen A.
R: 31,274
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US/08/343,804
                                                                                                                                                                                                                                                                                                                                                                                                                            6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            4054.214-US
                                                                                                                                                                                                                                                Score 110.5; DB Pred. No. 0.003; 0; Mismatches 1
                                                                        NKIMSIYHKYAETF---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Henrik
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Version
                                                                                                                                                                                                                                                                               DB 2;
                                                                                                                                                                                                                                                120;
                                                                                                                                                                                                                                                Indels
                                                                                                                                                                                                                                                                             Length
                                                                                                                                                                      -----FRLDAVKH 272
                                                                                                                                                                                                                                               113;
                                                                    -PWGGKLTG 186
                                                                                                                                                                                                                                             Gaps
     244
                                      379
                                                                                                                                                                                                                                             16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      244
```

밁 Q 밁 Ş 문 Qy

FS TA	STREET: 405 Lexington Avenue, 64th Floor CITY: New York STATE: New York STATE: New York COUNTRY: United States of America ZIP: 10174-6401 COMPUTER READABLE FORM: MEDIUM TYPE: Floppy disk COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS SOFTWARE: Patentin Release #1.0, Version #1.30 CURRENT APPLICATION NUMBER: US/08/687,399 FILING DATE: CLASSIFICATION NUMBER: US/08/687,399 FILING DATE: CLASSIFICATION NUMBER: 33.728 REFERENCE/DOCKET NUMBER: 31.728 REFERENCE/DOCKET NUMBER: 4127.204-US TELEPHONE: 212-867-0123 TELEPHONE: 212-867-0123 TELEPHONE: 212-867-0123 TELEPHONE: SEQ ID NO: 6: SEQUENCE CHARACTERISTICS: LENGTH: 549 amino acidd TOPOLLOGY: linear MOLECULE TYPE: protein	lication US/08687399 all arion: roft, Annette H. Marcher, Dorthe Pedersen, Hanne H. Nilsson, Thomas E. ENTION: A Combined Desizing and Bleac ENTION: Process QUENCES: 7 QUENCES: 7 CE ADDRESS: '	Db 380FKPLA-YAFILTRQEGYPCVFYGDYYGIPQYNIPSLKSKIDPLLIARRDYAYG 431  Qy 245 -QHKYLTWRAQKDPGHGLLKRLVGEAKAKELLRDFLFNGV 283
Qy  10.48; Pred. No. 0.03;  Best Local Similarity 19.48; Pred. No. 0.03;  Matches 68; Conservative 50; Mismatches 120; Indels 113; Gaps 16;  Qy  50 SYKEFAESALEETRKRIVLEPSHLQEKYSSWTGLDGKTELQMLAFKSSKIRLLRSMAIEN 109  110 ETMQVF-DFAGFMEPEYDTPIFCANFTSTNVNIVVLDLNPLHQLTDQTD	STATE: New York  OUNTRY: United States of America  ZIP: 10174-6401  ZIP: 10174-6401  ZIP: 10174-6401  APPUTER READABLE FORM:  #EDIUM TYPE: Floppy disk  COMPUTER: IBM PC compatible  OPERATING SYSTEM: PC-DOS/MS-DOS  SOFTWARE: Patentin Release #1.0, Version #1.30  RRENT APPLICATION DATA:  ILING DATE: 13-FEB-1996  LLASSIFICATION: 435  TILING DATE: 13-FEB-1996  LLASSIFICATION: REZA  XAME: Green, ReZA  REGISTRATION NUMBER: 38,475  REGISTRATION NUMBER: 4394.204-US  REGISTRATION NUMBER: 4394.204-US  RECOMMUNICATION INFORMATION:  FELEPHONE: 212-867-0123  FELEPHONE: 212-87-9655  MANTION FOR SEQ ID NO: 6:  DUBNCE CHARACTERISTICS:  LENGTH: 549 amino acids  TYPE: amino acid  TOPOLOGY: linear  10-908A-6  MATCH ASSESSMENT OF THE POSSON  10-908A-6	RESULT 10 US-08-600-908A-6 ; Sequence 6, Application US/08600908A ; Sequence 6, Application US/08600908A ; Patent NO. 5989169 ; GENERAL INFORMATION: APPLICANT: Svendsen, Allan APPLICANT: Bisg rd-Frantzen, Henrik APPLICANT: Borchert, Torben Vedel TITLE OF INVENTION: '-Amylase Mutants ; NUMBER OF SEQUENCES: 13 ; CORRESPONDENCE ADDRESS: ADDRESSEE: NO. 59891690 NO. 5989169disk of NO. 5989169th America, Inc. ; STREET: 405 Lexington Avenue, 64th Floor ; CITY: New York	Qy 245 -QHKYLTWRAQKDPGHGLLKRLVGEAKAKELLRDFLFNGV 283

```
οy
      Š
                                 밁
                                                      QΥ
                                                                                 밁
                                                                                                                                    밁
                                                                                                                                                            Ş
                                                                                                                                                                                                              δÃ
                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                             US-08-683-838A-6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RESULT 11
US-08-683-838A-6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              QY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          망
                                                                                                                                                                                                                                           Matches
                                                                                                                                                                                                                                                                    Query Match
                                                                                                                                                                                                                                                      Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Patent No. 602
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence
                                                                                                                                                                                                                                                                                                                                                                     INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                         MOLECULE TYPE:
                                                                                                                                                                                                                                                                                                                                           SEQUENCE CHARACTERISTICS:
LENGTH: 549 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   COMPUTER READABLE FORM: MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/600,908
FILING DATE: 13-FEB-1996
                                                                                                                                                                                                                                                                                                                                                                                            TELECOMMUNICATION INFORMATION: TELEPHONE: 212-867-0123
                                                                                                                                                                                                                                                                                                                                                                                                                                                           ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SOFTWARE: Patentin Rel CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CORRESPONDENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                     TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                   TELEFAX:
                                                                                                                                                                                                                                                                                                                                                                                                                               NAME: Green, Reza
REGISTRATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                        REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SOFTWARE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           OPERATING SYSTEM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                STREET:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   E OF INVENTION:
        245
                                                                                                                                                                                         229
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          432
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                284
                                                                                                                                                                                                                 50
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  INFORMATION:
                                                                                                                                                                                                                                           68;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               10174-6401
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                New York
                                                                                                                                                                                                                                                                                                                                amino acid
                                                                                                                                                                                                           SYKEFAESALEETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIEN 109
        -QHKYLT--
                                                     ESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRANCEA--
                                                                               HNKFYTASKSGGAFDMRTLMTNTLMKDQPTLAVTFVDNHDTEPGQALQSWVDPW-----
                                                                                                            QDKYY---
                                                                                                                                IKFSFFPDWLSYVRSQTGKPLFTVGEYWS-----YDINKLHNYITKTDGTMSLFDAPL 325
                                                                                                                                                           ETMQVF-DFAGFMEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTD-----Y
                                                                                                                                                                                      NYDYLMYADLDMDHPEVVTELKNWGKWYVNTTNIDG---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DELGTKTFIDYFPEYQTEDGTVS-----DKRSIIGKSYETRPWDLTGQFI 328
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DTVTINS--DGWGEFKVNGGSVSVWVPRKTTVSTIARPITTRPW--TGEFV 538
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      New York
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Application US/08683838A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TQHDYLDHSDIIGWTREGGTEKPGSGLAALITDGPGGSKWMYVGKQHAGKVFYDLTGNRS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              405 Lexington Avenue,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        United States of America
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Bisg rd-Frantzen, Henrik
Borchert, Torben Vedel
VENTION: Amylase Mutants
                                                                                                                                                                                                                                                                                                                                                                                   212-878-9655
                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        svendsen,
                            -FKPLA-YAFILTRQEGYPCVF--YGDYYGIPQYNIPSLKSKIDPLLIARRDYAYG
                                                                                                                                                                                                                                                                                                                     linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        IBM PC compatible
SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              o
.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ADDRESS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Floppy disk
                                                                                                                                                                                                                                                                                                        protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          6022724o No. 6022724disk of No.
                                                                                                                                                                                                                                                    6.4%;
     -WRAQ--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Release #1.0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Allan
                                                                                                                                                                                                                                                                                                                                                                                                                              38,475
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US/08/683,838A
                                                                                                                                                                                                                                                                                                                                                                     6:
                                                                                                                                                                                                                                         50;
                                                                                                                                                                                                                                                                                                                                                                                                                      4394.204-US

    KDPGHGLLKRL

                                                                                                                                                                                                                                                     Pred.
                                                                                                                                                                                                                                                    Score 110.5; DE Pred. No. 0.003;
                                                                                                        -NKIMSIYHKYAETF--
                                                                                                                                                                                                                                         Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               64th Floor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Version #1.30
                                                                                                                                                                                                                                                                DB 3;
                                                                                                                                                                                                                                         120;
                                                                                                                                                                                                                                       Indels
                                                                                                                                                                                                                                                                Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          6022724th America,
    VGEAKAKELLRDFLFNGV
                                                                                                                                                                                                                                                                549;
                                                                                                                                                                                                                                      113;
                                                                                                                                                                                     -FRLDAVKH
                                                                                                        PWGGKLTG 186
                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Inc.
                                                                                                                                                                                     272
                                                    244
                                                                               379
                                                                                                                                                           159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       491
                                                                                                                                                                                                                                      16;
                                                                                                                                                        US-08-468-700-37
                                                                                                                                                                       RESULT 13
                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                      δÃ
                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                       Q
                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                          Ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                   δõ
                                                                                                                                                                                                                                                                                                                                                                                        Š
                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ; TYPE: PRT
; ORGANISM: B.
US-09-636-252A-6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT 12
US-09-636-252A-6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                               Patent No.
                                                                                                                                  Sequence 37, Application US/08468700 Patent No. 5736499
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SOFTWARE: 1
SEQ ID NO 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Patent No. 644071
                                                                                                                   GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NUMBER OF SEQ ID NOS:
                        TITLE OF INVENTION: MUNUMBER OF SEQUENCES: 4
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LENGTH:
                                                                 APPLICANT:
                                                                                                     APPLICANT:
                                                                            APPLICANT:
                                                                                         APPLICANT:
                ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Local
                                                                                                                                                                                                                                     284
                                                                                                                                                                                                                                                                432
                                                                                                                                                                                                                                                                                                                380
                                                                                                                                                                                                                                                                                                                                         187
                                                                                                                                                                                                                                                                                                                                                                   326
                                                                                                                                                                                                             492
                                                                                                                                                                                                                                                                                        245
                                                                                                                                                                                                                                                                                                                                                                                          160
                                                                                                                                                                                                                                                                                                                                                                                                                   273
                                                                                                                                                                                                                                                                                                                                                                                                                                           110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     229
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    492
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            284
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      432
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             50
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             549
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    68; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FastSEQ
                                                                                                                                                                                                                                                                                                                                                                                          QDKYY----
 180
                                                                            CAROL A. REQUADT
TRACI H. ROPP
                                                                LEIF P.
                                                                                                     COLIN MITCHINSON
Genencor Int
0 Kimball Way
                                                  SOLHEIM
MUTANT ALPHA-AMYLASE
                                        40
             International
```

```
CURRENT FILING DATE: 2000-0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT: Svendsen, Allan
APPLICANT: Bisgard-Frantzen, Henrik
APPLICANT: Borchert, Torben Vedel
TITLE OF INVENTION: Alpha-Amylase Mutants
FILE REFERENCE: 0776/1F216-US2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRIOR APPLICATION NUMBER: 08/683,838 PRIOR FILING DATE: 1996-07-18
                                         DELGTKTFIDYFPEYQTEDGTVS-----DKRSIIGKSYETRPWDLTGQFI 328
                                                                                                                                                                                                                                                                 HNKFYTASKSGGAFDMRTLMTNTLMKDQPTLAVTFVDNHDTEPGQALQSWVDPW-----
                                                                                                                                                                                                                                                                                                                                                       IKFSFFPDWLSYVRSQTGKPLFTVGEYWS-----YDINKLHNYITKTDGTMSLFDAPL
                                                                                                                                                                                                                                                                                                                                                                                                 ETMQVF-DFAGFMEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTD------Y
                                                                                                                                                                                                                                                                                                                                                                                                                                               NYDYLMYADLDMDHPEVVTELKNWGKWYVNTTNIDG----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SYKEFAESALEETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIEN
DTVTINS--DGWGEFKVNGGSVSVWVPRKTTVSTIARPITTRPW--TGEFV 538
                                                                                     TQHDYLDHSDIIGWTREGGTEKPGSGLAALITDGPGGSKWMYVGKQHAGKVFYDLTGNRS
                                                                                                                                                                                                                       ESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRANCEA--
                                                                                                                                                                              ----FKPLA-YAFILTRQEGYPCVF--YGDYYGIPQYNIPSLKSKIDPLLIARRDYAYG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Application US/09636252A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DTVTINS--DGWGEFKVNGGSVSVWVPRKTTVSTIARPITTRPW--TGEFV 538
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TQHDYLDHSDIIGWTREGGTEKPGSGLAALITDGPGGSKWMYVGKQHAGKVFYDLTGNRS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DELGTKTFIDYFPEYQTEDGTVS-----DKRSIIGKSYETRPWDLTGQFI 328
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                stearothermophilus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        for Windows Version
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2000-08-10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        6.4%;
                                                                                                                                    -WRAQ----KDPGHGLLKRL--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US/09/636, 252A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   50;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 110.5;
Pred. No. 0.
                                                                                                                                                                                                                                                                                                             NKIMSIYHKYAETF ----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        3.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0.003;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DB 4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   120;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 549;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                    - VGEAKAKELLRDFLFNGV
                                                                                                                                                                                                                                                                                                                                                                                                                                             -----FRLDAVKH
                                                                                                                                                                                                                                                                                                             -----PWGGKLTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 113;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                        491
                                                                                                                                    283
                                                                                                                                                                           431
                                                                                                                                                                                                                                                                                                           186
                                                                                                                                                                                                                                                                                                                                                     325
                                                                                                                                                                                                                                                                                                                                                                                                                                             272
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       109
                                                                                                                                                                                                                     244
                                                                                                                                                                                                                                                                 379
                                                                                                                                                                                                                                                                                                                                                                                                   159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              491
```

Indels 118;

Gaps

17;

----FRLDGLKH

272

326

```
õ
                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                       8
                                                                                                                                                                                                                                                                                                                                                                                                                                          В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US-08-468-700-37
                                                                                                                                                                                                                                  US-08-645-971-5
                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                Sequence 5, Application US/08645971 Patent No. 5763385
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Matches
                                                                                                                                                             GENERAL INFORMATION:
APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        INFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
LENGTH: 548 amino acid
                                                                   TITLE OF INVENTION: Modification of invention: Calcium NUMBER OF SEQUENCES: 5 COMPUTER READABLE FORM: MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MOLECULE TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         REFERENCE/DOCKET NUMBER: GC
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ATTORNEY/AGENT INFORMATION:
NAME: Stone, Christopher
REGISTRATION NUMBER: 35,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              COMPUTER READABLE FORM:
     CURRENT APPLICATION DATA:
                                    COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   STRANDEDNESS: sing
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICATION NUMBER: US/0 FILING DATE: 06-JUN-1995 CLASSIFICATION: 252
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TELEFAX:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TELEPHONE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MEDIUM TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                              379
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   327
                                                                                                                                                                                                                                                                                                        489
                                                                                                                                                                                                                                                                                                                                                                            429
                                                                                                                                                                                                                                                                                                                                                                                                             245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         273
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             229
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        50 SYKEFAESALEETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIEN 109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 South San
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                94080
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ETMQVF-DFAGFMEPEYDTPIFCA-----NFFTSTNVNIVVLDLNPLHQLTDQ 156
                                                                                                                                                                                                                                                                                                      RSDTVTINS--DGWGEFKVNGGSVSVWVPRKTTVSTIARPITTRPW--TGEFV 537
                                                                                                                                                                                                                                                                                                                                     GVDELGTKTFIDYFPEYQTEDGTVS-----DKRSIIGKSYETRPWDLTGQFI 328
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ----NKFYTASKSGGAFDMRTLMTNTLMKDQPTLAVTFVDNHDTNPAKRCSHGRPW----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     IKFSFFPDWLSYVRSQTGKPLFTVGEYWSYDINKLHNYITKTNGTMSLFDA-PLH-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NYDYLMYADLDMDHPEVVTELKNWGKWYVNTTNIDG-----FRLDGLKH
                                                                                                                                                                                                                                                                                                                                                                        YGTQHDYLDHSDIIGWTREGVTEKPGSGLAALITDGAGRSKWMYVGKQHAGKVFYDLTGN
                                                                                                                                                                                                                                                                                                                                                                                                       ---QHKYLT-----WRAQ---KDPGHGLLKRL------VGEAKAKELLRDFLFN 281
                                                                                                                                                                                                                                                                                                                                                                                                                                          -----FKPLA-YAFILTRQEGYPCVF--YGDYYGIPQYNIPSLKSKIDPLLIARRDYA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TGESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRANCEA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TDYQDKYY-----PWGGKL 184
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      548 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (415) 742-7217
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                     PatentIn
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (415) 742-7555
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Francisco
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               6.18;
                                                                                                                          Modified Alpha-Amylases Having Altered Calcium Binding Properties
                    Release #1.0, Version #1.25 (EPO)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               35,696
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     US/08/468,700
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             37:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             50;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GC275
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score 105; DB 1
Pred. No. 0.012;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Mismatches 117;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DB 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      #1.25 (EPO)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 548;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels 118;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                            428
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 378
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     326
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-08-468-220-35; Sequence 35, Applia patent No. 5824532
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            뫄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     US-08-645-971-5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RESULT 15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICATION NUMBER: U
APPLICATION NUMBER: US/I
FILING DATE: 06-JUN-95
CLASSIFICATION: 435
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/:
FILING DATE: 10-FEB-94
                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT: APPLICANT:
                                                                                                                                                                                        ZIP: 94080
COMPUTER READABLE FORM:
                                                                                                                                                                                                                                                                                               APPLICANT: Requadt, Carol
APPLICANT: Solheim, Leif P.
TITLE OF INVENTION: Oxidatively Stable Alpha-Amylase
NUMBER OF SEQUENCES: 68
CORRESPONDENCE ADDRESS:
ADDRESSEB: Genencor International, Inc.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MOLECULE TYPE:
ORIGINAL SOURCE:
                                                                                                    COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0,
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TYPE: amino acids
STRANDEDNESS: single
                                                                                                                                                                                                                                                              STREET: 180 Kimball Way
CITY: South San Francisco
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TOPOLOGY:
                                                                                                                                                                          MEDIUM TYPE: 3.5 inch, 1.44
                                                                                                                                                                                                                               COUNTRY:
                                                                                                                                                                                                                                                   STATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ORGANISM: Bacillus stearothermophilus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           429
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               379
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              229
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         110 ETMQVF-DFAGFMEPEYDTPIFCA-----NFFTSTNVNIVVLDLNPLHQLTDQ 156
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      489 RSDTVTINS--DGWGEFKVNGGSVSVWVPRKTTVSTIARPITTRPW--TGEFV 537
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              185 TGESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRANCEA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        273 IKFSFFPDWLSYVRSQTGKPLFTVGEYWSYDINKLHNYITKTNGTMSLFDA-PLH-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           50 SYKEFAESALEETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIEN 109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              68;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GVDELGTKTFIDYFPEYQTEDGTVS-----DKRSIIGKSYETRPWDLTGQFI 328
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         YGTQHDYLDHSDIIGWTREGYTEKPGSGLAALITDGAGRSKWMYVGKQHAGKVFYDLTGN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NYDYLMYADLDMDHPEVVTELKNWGKWYVNTTNIDG----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ----NKFYTASKSGGAFDMRTLMTNTLMKDQPTLAVTFVDNHDTNPAKRCSHGRPW----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TDYQDKYY-----PWGGKL 184
                                                                                                                                                                                                                                               CA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ---QHKYLT-----WRAQ---KDPGHGLLKRL------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ----FKPLA-YAFILTRQEGYPCVF--YGDYYGIPQYNIPSLKSKIDPLLIARRDYA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Application US/08468220
                                                                                                                                                                                                                               USA
                                                                                                                                                                                                                                                                                                                                                                                                         Power, Scott
                                                                                                                                                                                                                                                                                                                                                                                                                           Mitchinson, Colin
                                                                                                                                                                                                                                                                                                                                                                                                                                            Barnett,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                              Antrim, Richard L.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                6.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                          Christopher
                  08/194,664
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US/08/645,971
                                                                                      US/08/468,220
                                                                                                                                                                                                                                                                                                                                                                                                         Ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                50;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 105; DB 1; Length 548; Pred. No. 0.012;
                                                                                                                                                                            ₹
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Mismatches
                                                                                                                          Version #1.25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 117;
```

-VGEAKAKELLRDFLFN

428 244 378

```
TELEFAX: (415) 742-7217

INFORMATION FOR SEQ ID NO: 35

SEQUIENCE CHARACTERISTICS:
LENGTH: 548 amino acids
TYPE: amino acid
STRANDEDNESS: single
TOPOLOGY: linear
MOLECULE TYPE: protein
US-08-468-220-35
                                                                                                                                                                                                                                                        Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
Search completed: June 24, 2003, 18:39:38 Job time: 25 secs
                                                                                                       밁
                                                                                                                                                     Ş
                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                    Вb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match 6.1%; Score 105; DB 2; Length 548; Best Local Similarity 19.3%; Pred. No. 0.012; Matches 68; Conservative 50; Mismatches 117; Indels 118; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/016,395
FILING DATE: 11-FEB-93
ATTORNEY/AGENT INFORMATION:
NAME: Stone, Christopher L.
REGISTRATION NUMBER: 35,696
REFERENCE/DOCKET NUMBER: GC220D1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TELECOMMUNICATION INFORMATION: TELEPHONE: (415) 742-7555
TELEFAX: (415) 742-7217
                                                                                                  489 RSDTVTINS--DGWGEFKVNGGSVSVWVPRKTTVSTIARPITTRPW--TGEEV 537
                                                                                                                                                                                                                                             245 ---QHKYLT-----WRAQ----KDPGHGLLKRL-------VGEAKAKELLRDFLFN 281
                                                                                                                                                                                                                                                                                                                                                            185 TGESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRANCEA 244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            157 TDYQDKYY-----
                                                                                                                                282 GVDELGTKTFIDYFPEYQTEDGTVS-----DKRSIIGKSYETRPWDLTGQFI 328
                                                                                                                                                                                                         429 YGTQHDYLDHSDIIGWTREGVTEKPGSGLAALITDGAGRSKWMYVGKQHAGKVFYDLTGN 488
                                                                                                                                                                                                                                                                                                              379 -----FKPLA-YAFILTRQEGYPCVF--YGDYYGIPQYNIPSLKSKIDPLLIARRDYA 428
                                                                                                                                                                                                                                                                                                                                                                                                                        327 ----NKFYTASKSGGAFDMRTLMTNTLMKDQPTLAVTFVDNHDTNPAKRCSHGRPW---- 378
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           273 IKFSFFPDWLSYVRSQTGKPLFTVGEYWSYDINKLHNYITKTNGTMSLFDA-PLH----- 326
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            110 ETMQVF-DFAGFMEPEYDTPIFCA------NFFTSTNVNIVVLDLNPLHQLTDQ 156
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  229 NYDYLMYADLDMDHPEVVTELKNWGKWYVNTTNIDG---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 50 SYKEFAESALEETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIEN 109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                35:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          -----NKIMSIYHKYAETF-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          -----PWGGKL 184
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ----FRLDGLKH 272
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    17;
```

```
Result
No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Minimum DB
Maximum DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    OM protein - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                     Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  on:
                                                                                                                                                                                                                                                          score greater than or equal to the score of the result being and is derived by analysis of the total score distribution
                                                                                                                                                                                                                                                                                  Pred. No.
    1724
339.5
215
215
215
210.5
210.5
210.5
210.5
210.5
210.5
210.5
210.5
                                                                                                                                                                                                           Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               seq
seq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               length: 0
length: 2000000000
  is the number of results predicted by chance to have a ster than or equal to the score of the result being printed,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 BLOSUM62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-09-870-406A-33
1724
1 MALSMEFGFSIGSCFKAPNP......
                                                                                                                                                                                                          Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  417779 seqs, 108206813 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                June 24, 2003, 18:38:00; Search time 160 Seconds
                                                                                                                                                                                                                      Query
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gapop 10.0 ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                  Published_Applications_AA:*
                                                                                                                                                                                                                                                                                                 : /cgn2_6/ptodata/2/pubpaa/US07_NEW_PUB.pep:*
:/cgn2_6/ptodata/2/pubpaa/US07_PUBCOMB.pep:*
:/cgn2_6/ptodata/2/pubpaa/PCTUS_PUBCOMB.pep:*
:/cgn2_6/ptodata/2/pubpaa/PCTUS_PUBCOMB.pep:*
:/cgn2_6/ptodata/2/pubpaa/US09_NEW_PUB.pep:*
:/cgn2_6/ptodata/2/pubpaa/US09_NEW_PUB.pep:*
:/cgn2_6/ptodata/2/pubpaa/US10_NEW_PUB.pep:*
:/cgn2_6/ptodata/2/pubpaa/US10_NEW_PUB.pep:*
:/cgn2_6/ptodata/2/pubpaa/US10_NEW_PUB.pep:*
:/cgn2_6/ptodata/2/pubpaa/US0_NEW_PUB.pep:*
:/cgn2_6/ptodata/2/pubpaa/US0_NEW_PUB.pep:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Copyright
                                                                                                                                                                                                                                                                                                                                                                                                         /cgn2_6/ptodata/2/pubpaa/US08_NEW, PUB.pep:*
/cgn2_6/ptodata/2/pubpaa/PCT_NEW_PUB.pep:*
/cgn2_6/ptodata/2/pubpaa/US06_NEW_PUB.pep:*
/cgn2_6/ptodata/2/pubpaa/US06_PUBCOMB.pep:*
                                                                                                                                                                                                            Length
  3299
3299
3299
3299
3299
2577
2577
2577
2577
2627
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GenCore version 5.1.6 (c) 1993 - 2003 Compugen
                                                                                                                                                                                                            DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gapext 0.5
    •••••••••••••
US-10-159-901-33

US-10-159-901-34

US-10-159-901-59

US-09-870-406A-33

US-09-870-406A-34

US-09-870-406A-54

US-10-159-901-54

US-10-159-901-52

US-10-159-901-36

US-10-159-901-36

US-10-159-901-36

US-10-159-901-50

US-09-870-406A-36

US-09-870-406A-50

US-09-870-406A-50

US-09-870-406A-50

US-09-870-406A-50

US-09-870-406A-50

US-09-870-406A-50

US-09-870-406A-50

US-09-870-406A-50
                                                                                                                                                                                                            H
                                                                                                                                                                                                                                         SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (without alignments)
222.500 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SIIGKSYETRPWDLTGQFIG
         Sequence
Sequence
Sequence
Sequence
Sequence
Sequence
Sequence
                                                                                                              Sequence
Sequence
Sequence
                                                                                                                                            Sequence
Sequence
Sequence
Sequence
Sequence
                                                                                                                                                                                                          Description
  Sequence
                                                                                           Sequence
                                                                                                     Sequence
                                                                                                       38
밁
                                                Q
                                                                       Б
                                                                                         δõ
                                                                                                              닭
                                                                                                                                 δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                    US-10-159-901-33
                                                                                                                                                                  Query Match
Best Local :
                                                                                                                                                        Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           181
                                                  121
                               121
                                                                                                                                                        329;
                                                                       61
                                                                                                                                                       Similarity 100.
29; Conservative
```

5	4	ω	Ν	1	0	9	æ	7	0	u	4	ω	N	ب	0	9	œ	7	σ	G	4	w	Ν	_	0
105.5	105.5	105.5	105.5	109.5	109.5	110.5	110.5	110.5	121.5	121.5	122.5	122.5	122.5	122.5	136	136	145	145	158	158	158	158	172.5	172.5	205
6.1	6.1	6.1	6.1	6.4	6.4	6.4	6.4	6.4	7.0	7.0	7.1	7.1	7.1	7.1	7.9	7.9	8.4	8.4		9.2				10.0	11.9
248	248	248	248	245	245	515	515	515	490	490	241	241	241	241	236	236	235	235	236	236	236.	236	257	257	280
9	9	9	9	9	9	10	9	9	9	9	9	9	9	9	9	ø	9	9	9	9	9	9	9	9	9
US-09-870-406A-42	US-09-870-406A-39	US-10-159-901-42	US-10-159-901-39	US-09-870-406A-41	US-10-159-901-41	US-09-854-346-6	US-10-146-327-8	US-09-918-543-6	US-09-870-406A-40	US-10-159-901-40	US-09-870-406A-47	US-09-870-406A-37	US-10-159-901-47	US-10-159-901-37	US-09-870-406A-48	US-10-159-901-48	US-09-870-406A-46	US-10-159-901-46	US-09-870-406A-45	US-09-870-406A-35	US-10-159-901-45	US-10-159-901-35	US-09-870-406A-53	US-10-159-901-53	US-09-870-406A-49
•	Sequence 39, Appl	42,	Sequence 39, Appl	Sequence 41, Appl	ï	Sequence 6, Appli	Sequence 8, Appli	Sequence 6, Appli			Sequence 47, Appl	Sequence 37, Appl							Sequence 45, Appl	35,			53,	Sequence 53, Appl	

```
Sequence 33, Application US/10159901
Publication No. US20030073235A1
GENERAL INFORMATION:
APPLICANT: LAGARIAS, JOHN
APPLICANT: KOICHI, TAKAYUKI
APPLICANT: FRANKENBERG, NICOLE
APPLICANT: GAMBETTA, GREGORY
APPLICANT: MONTGOMERY, BERONDA
                                                                                                                                                                                                                                                                                                                                                                                                                                               ; ORGANISM: Arabidopsis thaliana US-10-159-901-33
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TITLE OF INVENTION: LIGHT CONTROLLED GENE EXPRESSION UTILIZING HETEROLOGOUS PHYTOC FILE REFERENCE: 407T-907731US
CURRENT APPLICATION NUMBER: US/10/159,901
CURRENT FILING DATE: 2002-05-29
PRIOR APPLICATION NUMBER: 60/294,463
PRIOR FILING DATE: 2001-05-29
NUMBER OF SEQ ID NOS: 57
SOFTWARE: Patentin version 3.0
SEQ ID NO 33
LENGTH: 329
TYPE: PRT
                                                                                                                                                                                     61 ETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIENETMQVFDFAGF
                                                                                                                                                                                                                                                                                  1 MALSMEFGFSIGSCFKAPNPPVLISASPNKINFTLRRRKKRFLLRVSAVSYKEFAESALE
                                                                                                                                                                                                                                                       1 MALSMEFGFSIGSCFKAPNPPVLISASPNKINFTLRRRKKRFLLRVSAVSYKEFAESALE
GGKLTGESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRA
                                                                                              MEPEYDTPIECANFETSTNVNIVVLDLNPLHQLTDQTDYQDKYYNKIMSIYHKYAETFPW
                                                                   MEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTDYQDKYYNKIMSIYHKYAETFPW
                                                                                                                                                                ETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIENETMQVFDFAGF
                                                                                                                                                                                                                                                                                                                                                                         100.0%; Score 1724; DB 100.0%; Pred. No. 3.4e-1
                                                                                                                                                                                                                                                                                                                                                      0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ALIGNMENTS
                                                                                                                                                                                                                                                                                                                                                      Mismatches
                                                                                                                                                                                                                                                                                                                                                                         DB 9;
3.4e-158;
                                                                                                                                                                                                                                                                                                                                                      0;
                                                                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                                                                                                                                               Length
                                                                                                                                                                                                                                                                                                                                                      0
                                                                                                                                                                                                                                                                                                                                                      Gaps
                        240
                                                                                                                  180
                                                                                                                                                                120
                                                                                                                                                                                                              120
                                                                                                                                                                                                                                                         60
```

0,:

Gaps

```
US-10-159-901-55
                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                     ρ
                                                                                                                                                                                                                                                                                                VQ
                                                                                                                                                                                                                                                                        В
                                                                                                                                                                                                                                                                                                                                   В
                                                                                                                                                                                                                                                                                                                                                                Qy
                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                              Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ; TYPE: PRT
; ORGANISM: Arapidopsis thaliana
US-10-159-901-34
                                                                                                 GENERAL
                                                                                                      Sequence 55, Application US/10159901 Publication No. US20030073235A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8
                                          APPLICANT: LAGARIAS, JOHN
APPLICANT: KOICHI, TAKAYUKI
APPLICANT: FRANKENBERG, NIC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Вb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Qy
                                   APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SOFTWARE: PatentIn version 3.0 SEQ ID NO 34
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence 34, Application US/10159901
Publication No. US20030073235A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT: MONTGOMERY, BERONDA
TITLE OF INVENTION: LIGHT CONTROLLED GENE EXPRESSION UTILIZING HETEROLOGOUS PHYTOCHRG
FILE REFERENCE: 4077-907731US
CURRENT APPLICATION NUMBER: US/10/159,901
CURRENT FILING DATE: 2002-05-29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GENERAL INFORMATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRIOR APPLICATION NUMBER: 60% PRIOR FILING DATE: 2001-05-29 NUMBER OF SEQ ID NOS: 57
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT: LAGARIAS, JOHN APPLICANT: KOICHI, TAKAYI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Local Similarity
                                                                                            INFORMATION:
                                                                                                                                                                                                        301
                                                                                                                                                                                                                                       301
                                                                                                                                                                                                                                                                     241
                                                                                                                                                                                                                                                                                                     241
                                                                                                                                                                                                                                                                                                                                   181
                                                                                                                                                                                                                                                                                                                                                                  181
                                                                                                                                                                                                                                                                                                                                                                                                  121
                                                                                                                                                                                                                                                                                                                                                                                                  121 MEPEYDTPIFCANEFTSTNVNIVVLDLNPLHQLTDQTDYQDKYYNKIMSIYHKYAETFPW 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                              61 ETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIENETMQVFDFAGF 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          329;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1 MALSMEFGFSIGSCFKAPNPPVLISASPNKINFTLRRRKKRFLLRVSAVSYKEFAESALE 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1 MALSMEFGFSIGSCFKAPNPPVLISASDNKINFTLRRRKKRELLRVSAVSYKEFAESALE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              181 GGKLTGESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRA
                                                                                                                                                                                            NCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLRDFLFNGVDELGTKTFIDYFPEYQT
                         FRANKENBERG, NICOLE GAMBETTA, GREGORY
                                                                                                                                                                                                                                                    NCEAQHKYLTWRAQKDPGHGLLKRLYGEAKAKELLRDFLFNGVDELGTKTFIDYFPEYQT 300
                                                                                                                                                                                                                                                                                                                                                                               MEPEYDTPIFCANFFTSTNVNIVYLDLNPLHQLTDQTDYQDKYYNKIMSIYHKYAETFPW
                                                                                                                                                                                                                                                                                                                                                                                                                                              ETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIENETMQVFDFAGF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    KOICHI, TAKAYUKI
FRANKENBERG, NICOLE
GAMBETTA, GREGORY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NCEAQHKYLTWRAQKDPGHGLLKRLYGEAKAKELLRDFLFNGVDELGTKTEIDYFPEYQT 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NCEAGHKYLTWRAGKDPGHGLLKRLVGEAKAKELLRDFLFNGVDELGTKTFIDYFPEYQT 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            100.0%; Score 1724; DB 9; 100.0%; Pred. No. 3.4e-158; tive 0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 329;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                    300
                                                                                                                                                                                                                                                                                                                    240
                                                                                                                                                                                                                                                                                                                                                 240
                                                                                                                                                                                                                                                                                                                                                                                 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               240
                                                                        US-09-870-406A-33
                                                                                                                                                                                                                                                                                                                                                                                                                                     US-09-870-406A-33
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ωy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   QΥ
                       Query Match
Best Local Similarity
                                                                                                                                      SEQ ID NO 33
                                                                                                                                                                                                                                                                                                                                                                                   Sequence 33, Application US/09870406A Publication No. US20030104379A1 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ; ORGANISM: Arapidopsis thaliana US-10-159-901-55
                                                                                                                                                                     APPLICANT: MONTGOMERY, BERONDA
TITLE OF INVENTION: HY2 FAMILY OF BILIN REDUCTASES
FILE REFERENCE: 407T-907720US
CURRENT APPLICATION NUMBER: US/09/870,406A
CURRENT FILING DATE: 2002-09-04
PRIOR APPLICATION NUMBER: 60/271,758
PRIOR FILING DATE: 2001-02-26
PRIOR APPLICATION NUMBER: 60/210,286
PRIOR PRICING DATE: 2000-06-08
                                                                                                                                                                                                                                                                                                                                       APPLICANT: LAGARIAS, JOHN
APPLICANT: KOICHI, TAKAYUKI
APPLICANT: FRANKENBERG, NICO
                                                                                                      LENGTH: 32
TYPE: PRT
                                                                                                                                                  NUMBER OF SEQ ID NOS: 57
SOFTWARE: PatentIn versi
                                                                                                                                                                                                                                                                                                                             APPLICANT:
                                                                                ORGANISM: Arabidopsis thaliana
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQ ID NO 55
LENGTH: 329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Matches 329;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT: MONTGOMERY, BERONDA
TITLE OF INVENTION: LIGHT CONTROLLED GENE EXPRESSION UTILIZING HETEROLOGOUS PHYTOM
FILE REFERENCE: 4077-907731US
CURRENT APPLICATION NUMBER: US/10/159,901
CURRENT FILING DATE: 2002-05-29
CURRENT FILING DATE: 2002-05-29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PRIOR FILING DATE: 2001-05-29
NUMBER OF SEQ ID NOS: 57
SOFTWARE: PatentIn version 3.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PRIOR APPLICATION NUMBER: 60/294,463
PRIOR FILING DATE: 2001-05-29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              301 EDGTVSDKRSIIGKSYETRPWDLTGQFIG 329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               181
                                                                                                                      329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             121 MEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTDYQDKYYNKIMSIYHKYAETFPW 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            121 MEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTDYQDKYYNKIMSIYHKYAETFPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         61 ETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIENETMQVFDFAGF
                                                                                                                                               PatentIn version 3.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EDGTVSDKRSIIGKSYETRPWDLTGQFIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLRDFLFNGVDELGTKTFTDYFPEYQT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GGKLTGESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRA 240
                                                                                                                                                                                                                                                                                                                      FRANKENBERG, NICOLE GAMBETTA, GREGORY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NCEAOHKYLTWRAOKDPGHGLLKRLVGEAKAKELLRDFLFNGVDELGTKTETDYFPEYQT 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GGKLTGESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIENETMQVFDFAGF 120
      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                    100.0%;
                                 100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             100.0%;
      0
Score 1724;
Pred. No. 3.4
0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 1724; DB 9;
Pred. No. 3.4e-158;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Mismatches
               4; DB 9;
3.4e-158;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              329
                              Length 329;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Indels
```

300

240

180

120

60

60

0;

```
CURRENT APPLICATION NUMBER: US/09/870,406A
CURRENT FILING DATE: 2002-09-04
PRIOR APPLICATION NUMBER: 60/271,758
PRIOR FILING DATE: 2001-02-26
PRIOR APPLICATION NUMBER: 60/210,286
PRIOR FILING DATE: 2000-06-08
NUMBER OF SEQ ID NOS: 57
SOFTWARE: Patentin version 3.0
SEQ ID NO 34
LENGTH: 329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-09-870-406A-34; Sequence 34, Application US/09870406A; Publication No. US20030104379A1
                                                                                                                                                                  Ş
                                                                                                                                                                                                                                                                                                                      ; LENGTH: 329
TYPE: PRT
; ORGANISM: Arapidopsis thaliana
US-09-870-406a-34
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  δõ
                                                                                     밁
                                                                                                               Š
                                                                                                                                           밁
                                                                                                                                                                                                     밁
                                                                                                                                                                                                                              Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                           망
                                                   δ
                                                                                                                                                                                                                                                              Query Match
Best Local Simi
Matches 329;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT: LAGARIAS, JOHN
APPLICANT: KOICHI, TAKAYUKI
APPLICANT: FRANKENBERG, NICOLE
APPLICANT: GAMBETTA, GREGORY
APPLICANT: MONTGOMERY, BERONDY
APPLICANT: MONTGOMERY, BERONDY
TITLE OF INVENTION: HYZ FEMILY OF BILIN REDUCTASES
FILE REFERENCE: 4077-907720US
                                                                                                                                                                                                                                                                             Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   121
                            181
                                                         181
                                                                                     121
                                                                                                                121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     241
                                                                                                                                              61
                                                                                                                                                                        61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           61
                                                                                                                                                                                                   MEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTDYQDKYYNKIMSIYHKYAETFPW 180
                                                                                  ETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIENETMQVFDFAGF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             EDGTVSDKRSIIGKSYETRPWDLTGQFIG 329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLRDFLFNGVDELGTKTFIDYFPEYQT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GGKLTGESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MALSMEFGFSIGSCFKAPNPPVLISASPNKINFTLRRRKKRFLLRVSAVSYKEFAESALE
                           GGKLTGESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRA 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLRDFLFNGVDELGTKTFIDYFPEYQT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GGKLTGESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MALSMEFGFSIGSCFKAPNPPVLISASPNKINFTLRRRKKRFLLRVSAVSYKEFAESALE
NCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLRDFLFNGVDELGTKTFIDYFPEYQT
                                                                                                                                             ETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIENETMQVFDFAGF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EDGTVSDKRSIIGKSYETRPWDLTGQFIG 329
                                                                                                                                                                                                                                                            100.0%; Score 1724; DB 9; ilarity 100.0%; Pred. No. 3.4e-158; Conservative 0; Mismatches 0;
                                                                                                                                                                                                                                                                                       Length
                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                              0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          240
                                                                                                                180
                                                                                                                                                                        120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               240
                                                                                     180
                                                                                                                                                                                                      60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       60
```

```
CURRENT APPLICATION NUMBER: US/09/870,4
CURRENT FILING DATE: 2002-09-04
PRIOR APPLICATION NUMBER: 60/271,758
PRIOR FILING DATE: 2001-02-26
PRIOR APPLICATION NUMBER: 60/210,286
PRIOR FILING DATE: 2000-06-08
NUMBER OF SEQ ID NOS: 57
SOFTWARE: PATENTIN VERSION 3.0
SEQ ID NO 55
LENGTH: 329
                                                                               Qy
                                                                                                                밁
                                                                                                                                          Q
                                                                                                                                                                                                   ΩV
                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                        Ş
                                                                                                                                                                                                                                                                                      닭
                                                                                                                                                                                                                                                                                                                                                                                                        ; ORGANISM: Arapidopsis thaliana US-09-870-406A-55
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
 밁
                            δã
                                                         망
                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-09-870-406A-55
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GENERAL INFORMATION
                                                                                                                                                                                                                                                                                                                                                            Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence 55, Application US/09870406A Publication No. US20030104379A1
                                                                                                                                                                                                                                                                                                                                                Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICANT: LAGARIAS, JOHN
APPLICANT: KOICHI, TAKAYUKI
APPLICANT: KOICHI, TAKAYUKI
APPLICANT: GAMBETTA, GREGORY
APPLICANT: GAMBETTA, GREGORY
APPLICANT: MONTGOMERY, BERONDA
TITLE OF INVENTION: HY2 FAMILY OF BILIN REDUCTASES
FILE REFERENCE: 407T-907720US
                                                                                                                                                                                                                                                                                                                                                                                                                                     TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   301
                            301
                                                                                                                  181
                                                                                                                                                                         301
                                                                                    241
                                                                                                                                             181
                                                                                                                                                                                                                                 61 ETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIENETMQVFDFAGF
                                                                                                                                                                                                                                                                                      h 100.0%; Score 1724; DB 9; Similarity 100.0%; Pred. No. 3.4e-158; 29; Conservative 0; Mismatches 0;
                                                                                                               EDGTVSDKRSIIGKSYETRPWDLTGQPIG 329
                                                                        NCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLRDFLFNGVDELGTKTFIDYFPEYQT
                                                                                                                                                                                                                                               ETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIENETMQVFDFAGF 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           EDGTVSDKRSIIGKSYETRPWDLTGQFIG 329
                                                         NCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLRDFLFNGVDELGTKTFIDYFPEYQT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US/09/870,406A
                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                          Length
                                                                                                                                                                                                                                                                                                                                               0,
                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                             240
                                                                                                                  240
                                                                                                                                                                                                                                 120
                                                                                                                                                                                                                                                                                       60
                                                                                                                                                                                                                                                                                                                  60
                                                                                                                                                                                                                                                                                                                                               0
```

; Sequence 54, Application US/10159901
; Publication No. US/20030073235A1
; GENERAL INFORMATION:
; APPLICANT: LAGARIAS, JOHN
; APPLICANT: KOICHI, TAKAYUKI
; APPLICANT: FRANKENBERG, NICOLE
; APPLICANT: GAMBETTA, GREGORY
; APPLICANT: MONTGOMERY, BERONDA

US-10-159-901-54

```
; ORGANISM: NO. US-09-870-406A-54
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-09-870-406A-54
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ; TYPE: PRT; ORGANISM: NO. US-10-159-901-54
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SOFTWARE: Pat
SEQ ID NO 54
LENGTH: 255
                                                                                                            Matches
                                                                                                                                                   Query Match
                                                                                                                                                                                                                                                                   SEQ ID NO 54
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GENERAL INFORMATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence 54, Appropriate Publication No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
                                                                                                                                                                                                                                                                                   SOFTWARE: PatentIn version 3.0
                                                                                                                                                                                                                                                                                              NUMBER OF SEQ ID NOS: 57
                                                                                                                                                                                                                                                                                                                                                             APPLICANT: MONTGOMERY, BERONDA
TITLE OF INVENTION: HT2 FAMILY OF BILIN REDUCTASES
FILE REFERENCE: 407T-907720US
CURRENT APPLICATION NUMBER: US/09/870,406A
CURRENT FILING DATE: 2002-09-04
PRIOR APPLICATION NUMBER: 60/271,758
PRIOR FILING DATE: 2001-02-26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICANT: LAGARIAS, JOHN
APPLICANT: KOICHI, TAKAYUKI
APPLICANT: FRANKENBERG, NICOLE
APPLICANT: GAMBETTA, GREGORY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CURRENT APPLICATION NUMBER: US/10/159,901
CURRENT FILING DATE: 2002-05-29
PRIOR APPLICATION NUMBER: 60/294,463
PRIOR FILING DATE: 2001-05-29
NUMBER OF SEQ ID NOS: 57
                                                                                                                                                                                                                                                                                                                        PRIOR APPLICATION NUMBER: PRIOR FILING DATE: 2000-00
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TITLE OF INVENTION: LIGHT CONTROLLED GENE EXPRESSION UTILIZING HETEROLOGOUS PHYTOCHROFILE REFERENCE: 407T-907731US
                                                                                                                                                                                                                              TYPE: PRT
                                                                                                                              Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            218 YYQAWLEMTIQVREEMEPSHVRANCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLRD 277
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           278
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    158 DYQDKYYNKIMSIYHKYAETFPWGGKLTGESIKFFSPLVMWTRFSSSKEKHKALFSAFLE 217
                                                         45 RVSAVSYKEFAESALEETRKRIVLEPSHLQEKYSSMTGLDGKTELQ-----MLAFKSSK 98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             65 LRQIRAAHVQGGNSLQVLNFVIFPHLNYDLPFFGADLVTLPGGHLIALDMQPLFR--DDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             45 RYSAVSYKEFAESALEETRKRIVLEPSHLQEKYSSMTGLDGKTELQ-----MLAFKSSK 98
                                                                                                                                                                                                                                                 255
                                                                                                            76;
                      5 RSDVTLYQPFLDYAIAYMRSRLDLEPYPIPTGFESNSAVVGKGKNQEEVVTTSYAFQTAK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 σ
                                                                                                                            Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PatentIn version 3.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FLFD 246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          YLKAYLDFVEQAEAVTDSQNLVAIKQAQLRYLRYRAEKDPARGMFKRFYGAEWTEEYIHG 242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FLFN 281
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AYQAKYTEPILPIFHAHQQHLSWGGDFPEEAQPFFSPAFLWTRPQETAVVETQVFAAFKD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  IRLLRSMAIE-NETMQVFDFAGFMEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQT 157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RSDVTLYQPFLDYAIAYMRSRLDLEPYPIPTGFESNSAVVGKGKNQEEVVTTSYAFQTAK 64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Application US/09870406A
                                                                                                        Conservative
                                                                                                                                                                                                  US20030104379Altoc punctiforme
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US20030073235Altoc punctiforme
                                                                                                                        19.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            19.7%;
31.1%;
                                                                                                                                                                                                                                                                                                                                           60/210,286
                                                                                                      51;
                                                                                                                          Score 339.5; DB 9;
Pred. No. 1.1e-24;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Score 339.5; DB 9; Pred. No. 1.1e-24;
                                                                                                      Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        108;
                                                                                                      108;
                                                                                                                                        Length
                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length
                                                                                                                                          255;
                                                                                                    9;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      9;
                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                        64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ω
                                                                                                                                                                           RESULT 10
US-10-159-901-52
                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                              Ş
                                                                                                                                                                                                                                                                                                                                    В
                                                                                                                                                                                                                                                                                                                                                                       Š
                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                   20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ; ORGANISM: PROCHLOROCOCCUS MARINUS US-10-159-901-38
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT 9
US-10-159-901-38
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ş
                                                                                                                  Sequence 52, Application US/10159901 Publication No. US20030073235A1 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SOFTWARE: PatentIn version 3.0 SEQ ID NO 38
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence 38, Application US/10159901 Publication No. US20030073235A1
                                      APPLICANT:
APPLICANT:
    APPLICANT:
TITLE OF I
                                                                                             APPLICANT: LAGARIAS,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FILE REFERENCE: 407T-907731US CURRENT APPLICATION NUMBER: US CURRENT FILING DATE: 2002-05-
                                                                               APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PRIOR APPLICATION NUMBER: PRIOR FILING DATE: 2001-05
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT: LAGARIAS,
APPLICANT: KOICHI,
APPLICANT: FRANKENBI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NUMBER OF SEQ ID NOS: 57
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT: MONTGOMERY, BERONDA
TITLE OF INVENTION: LIGHT CONTROLLED GENE EXPRESSION UTILIZING HETEROLOGOUS PHYTOC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LENGTH: 257
                                                                                                                                                                                                                                                                                                236
                                                                                                                                                                                                                                                                                                                                      152
                                                                                                                                                                                                                                                       211 ERALKILEGQKAYINYRSTKDPARAMLCRFYGKEWTEDYIHKVLFN 256
                                                                                                                                                                                                                                                                                                                                                                   180 WGGKLTGESIKFFSPLVMWTRFSSSKEK----HKALFSAFLEYYQAWLEMTIQVREEMEP 235
                                                                                                                                                                                                                                                                                                                                                                                                                                                 120 FMEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTDYQDKYYNKIMSIYHKYAETFP 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            183 YLKAYLDFVEQAEAVTDSQNLVAIKQAQLRYLRYRAEKDPARGMFKRFYGAEWTEEYIHG 242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       243 FLFD 246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              278
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   218 YYQAWLEMTIQVREEMEPSHVRANCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLRD 277
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              123
                                                                                                                                                                                                                                                                                                                                                                                                                  94
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   35 IEPYPVSHDFLSKESITGSRRNPVHVTTLTWAA-KFEKIKQVRLACIKGGESLSVFNLLI 93
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               158 DYQDKYYNKIMSIYHKYAETFPWGGKLTGESIKFFSPLVMWTRFSSSKEKHKALFSAFLE 217
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              68 LEPSHLQEKYSSMTGLDGK-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              99
    INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       59;
                                                                                                                                                                                                                                                                                         SHVRANCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLRDFLFN 281
                                                                                                                                                                                                                                                                                                                                SGGEIPKEAEPYFSPGFLWSRLPLSKESDNIISEILRPAFGEYLSLYIEL-LHIAKPLKK 210
                                                                                                                                                                                                                                                                                                                                                                                                            HPLNDYDLPFFGADFVTLPNGHLLALDLQPALKL--DNIHTENVWPRLIPLHDHWQSLLP
                                                       KOICHI, TAKAYUKI
FRANKENBERG, NICOLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FLFN 281
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AYQAKYTEPILPIFHAHQQHLSWGGDFPEEAQPFFSPAFLWTRPQETAVVETQVFAAFKD 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LRQIRAAHVQGGNSLQVLNFVIFPHLNYDLPFFGADLVTLPGGHLIALDMQPLFR--DDS 122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          IRLLRSMAIE-NETMQVFDFAGFMEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQT 157
MONTGOMERY, BERONDA

MENTION: LIGHT CONTROLLED
                                        GAMBETTA, GREGORY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GAMBETTA, GREGORY MONTGOMERY, BERON
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FRANKENBERG, NICOLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           KOICHI, TAKAYUKI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2001-05-29
                                                                                                  JOHN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NHOL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        12.5%; 26.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        60/294,463
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US/10/159,901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     48;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 215; DB 9;
Pred. No. 1.1e-12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Mismatches
  GENE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TELQMLAFKSSKIRLLRSMAIE-NETMQVFDFAG
EXPRESSION UTILIZING
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     103;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length 257;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels
```

16;

Gaps

119

151

밁 Š 밁 δÃ 멍 Qγ 밁 δõ 뫄 QY

Qy 밁

HETEROLOGOUS PHYTOC

FILE REFERENCE: 407T-907731US

```
Ş
                                           밁
                                                                            S
S
                                                                                                                         멍
                                                                                                                                                                  δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ; ORGANISM: Prochlorococcus marinus US-10-159-901-52
                                                                                                                                                                                                                                                                                              US-09-870-406A-38
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-09-870-406A-38
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 38, Application US/09870406A Publication No. US20030104379A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SOFTWARE: PatentIn version 3.0 SEQ ID NO 52
                                                                                                                                                                                                                                                                                                                                                                               SEQ ID NO 38
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GENERAL INFORMATION
                                                                                                                                                                                                              Matches
                                                                                                                                                                                                                                                     Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CURRENT APPLICATION NUMBER: US/10/159,901
CURRENT FILING DATE: 2002-05-29
PRIOR APPLICATION NUMBER: 60/294,463
PRIOR FILING DATE: 2001-05-29
NUMBER OF SEQ ID NOS: 57
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FILE REFERENCE: 407T-907720US
CURRENT APPLICATION NUMBER: US/09/870,406A
CURRENT FILING DATE: 2002-09-04
                                                                                                                                                                                                                                                                                                                                                                                                                      PRIOR APPLICATION NUMBER: 60/210,286 PRIOR FILING DATE: 2000-06-08 NUMBER OF SEQ ID NOS: 57
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT: MONTGOMERY, BERONDA
TITLE OF INVENTION: HY2 FAMILY OF BILIN REDUCTASES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRIOR APPLICATION NUMBER: 60/271,758 PRIOR FILING DATE: 2001-02-26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICANT: LAGARIAS, JOHN APPLICANT: KOICHI, TAKAYUK
                                                                                                                                                                                                                                                                                                                                                                                                  SOFTWARE: PatentIn version 3.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT:
                                                                                                                                                                                                                                                                                                           LENGTH: 257
TYPE: PRT
ORGANISM: PROCHLOROCOCCUS MARINUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ENGTH: 257
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Local Similarity
                                                                                                                                                                                                                                 Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        120 FMEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTDYQDKYYNKIMSIYHKYAETFP 179
    180
                                                                              120 FMEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTDYQDKYYNKIMSIYHKYAETFP 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       180 WGGKLTGESIKFFSPLVMWTRFSSSKEK----HKALFSAFLEYYQAWLEMTIQVREEMEP 235
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     94
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           68 LEPSHLQEKYSSMTGLDGK-----TELQMLAFKSSKIRLLRSMAIE-NETMQVFDFAG
                                           94
                                                                                                                              35
                                                                                                                                                                68 LEPSHLQEKYSSMTGLDGK-----TELQMLAFKSSKIRLLRSMAIE-NETMQVFDFAG 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 35 IEPYPVSHDFLSKESITGSRRNPVHVTTLTWAA-KFEKIKQVRLACIKGGESLSVFNLLI 93
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          59;
                                                                                                                                                                                                                             h 12.5%; Score 215; DB 9;
Similarity 26.1%; Pred. No. 1.1e-12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                HPLNDYDLPFFGADFVTLPNGHLLALDLQPALKL--DNIHTENVWPRLIPLHDHWQSLLP
WGGKLTGESIKFFSPLVMWTRFSSSKEK----HKALFSAFLEYYQAWLEMTIQVREEMEP 235
                                         HPLNDYDLPFFGADFVTLPNGHLLALDLQPALKL--DNIHTENVWPRLIPLHDHWQSLLP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ERALKILEGQKAYINYRSTKDPARAMLCRFYGKEWTEDYIHKVLFN 256
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SHVRANCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLRDFLFN 281
                                                                                                                         IEPYPVSHDFLSKESITGSRRNPVHVTTLTWAA-KFEKIKQVRLACIKGGESLSVFNLLI 93
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SGGEIPKEAEPYFSPGFLWSRLPLSKESDNIISEILRPAFGEYLSLYIEL-LHIAKPLKK 210
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  KOICHI, TAKAYUKI
FRANKENBERG, NICOLE
GAMBETTA, GREGORY
                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         12.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        48;
                                                                                                                                                                                                          48; Mismatches 103; Indels 16;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 215; DB 9;
Pred. No. 1.1e-12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Mismatches 103; Indels
                                                                                                                                                                                                                                                 Length 257;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 257;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   16;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                151
                                                                                                                                                                                                          6;
```

```
US-10-159-901-36

; Sequence 36, Application US/10159901

; Publication No. US20030073235A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ğ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            В
                                                                                                                                                                                                                                                                                                                                                                                                                         В
                                                                                                                                                                                                                                                                                                                                                                                                                                                              δã
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-09-870-406A-52
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT 12
US-09-870-406A-52
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQ ID NO 52
LENGTH: 257
TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Best Loc
Matches
                                                                                                                                                                                                                                                                        GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence 52, Appropriate Publication No.
                                                                                                                                                                                                                             APPLICANT: LAGARIAS, JOHN APPLICANT: KOICHI, TAKAYI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CURRENT APPLICATION NUMBER: US/09/870,406A CURRENT FILING DATE: 2002-09-04 PRIOR APPLICATION NUMBER: 60/271,758
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICANT: MONTGOMERY, BERONDA
TITLE OF INVENTION: HYZ FAMILY OF BILIN REDUCTASES
FILE REFERENCE: 4077-907720US
                                                                              CURRENT FILING DATE: 2002-05
                                                                                                                      APPLICANT: MONTGOMERY, BERONDA
TITLE OF INVENTION: LIGHT CONTROLLED GENE EXPRESSION UTILIZING
FILE REFERENCE: 407T-907731US
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PRIOR FILING DATE: 2001-02-26
PRIOR APPLICATION NUMBER: 60/210,286
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT:
SOFTWARE: PatentIn
                   PRIOR FILING DATE: 2001-05-29 NUMBER OF SEQ ID NOS: 57
                                                             PRIOR APPLICATION NUMBER: 60/294,463
                                                                                                                                                                                     APPLICANT:
                                                                                                                                                                                                             APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PRIOR FILING DATE: 2000-06-08
NUMBER OF SEQ ID NOS: 57
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT: LAGARIAS,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SOFTWARE: PatentIn version 3.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ORGANISM: Prochlorococcus marinus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          152
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          152
                                                                                                                                                                                                                                                                                                                                                                                                                         211 ERALKILEGOKAYINYRSTKDPARAMLCRFYGKEWTEDYIHKVLFN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  120 FMEPEYDTPIFCANFFTSTNVNIVYLDLNPLHQLTDQTDYQDKYYNKIMSIYHKYAETFP 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              35
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         94 HPLNDYDLPFFGADFVTLPNGHLLALDLQPALKL--DNIHTENVWPRLIPLHDHWQSLLP 151
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     68 LEPSHLQEKYSSMTGLDGK-----TELQMLAFKSSKIRLLRSMAIE-NETMQVFDFAG 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               59;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          h 12.5%;
Similarity 26.1%;
59; Conservative 48
                                                                                                                                                                                                                                                                                                                                                                                                                                                                SHVRANCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLRDFLFN 281
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               WGGKLTGESIKFFSPLVMWTRFSSSKEK----HKALFSAFLEYYQAWLEMTIQVREEMEP 235
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            IEPYPVSHDFLSKESITGSRRNPVHVTTLTWAA-KFEKIKQVRLACIKGGESLSVFNLLI 93
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ERALKILEGQKAYINYRSTKDPARAMLCRFYGKEWTEDYIHKVLFN 256
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SGGEIPKEAEPYFSPGFLWSRLPLSKESDNIISEILRPAFGEYLSLYIEL-LHIAKPLKK 210
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SGGEIPKEAEPYFSPGFLWSRLPLSKESDNIISEILRPAFGEYLSLYIEL-LHIAKPLKK 210
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SHVRANCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLRDFLFN 281
                                                                                                                                                                                                  KOICHI, TAKAYUKI
FRANKENBERG, NICOLE
                                                                                                                                                                                     GAMBETTA, GREGORY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            KOICHI, TAKAYUKI FRANKENBERG, NICOLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Application US/09870406A
No. US20030104379A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GAMBETTA, GREGORY
version 3.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        JOHN
                                                                                                    US/10/159,901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               48;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 215; DB 9;
Pred. No. 1.1e-12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 257;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                         256
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               16;
                                                                                                                                              HETEROLOGOUS PHYTOC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               9
```

```
ρy
                                                                                                                                  Дb
                                                                                                                                                                     ΩV
                                                                                                                                                                                                             В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ğ
                     Š
                                                          В
                                                                                                                                                                                                                                              Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 몽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ; TYPE: PRT; ORGANISM: Synechococcus sp
US-10-159-901-36
                                                                                                                                                                                                                                                                                                                                                           ; ORGANISM: Synechocystis sp. us-10-159-901-50
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-10-159-901-50
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT 14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQ ID NO 36
LENGTH: 257
                                                                                                                                                                                                                                                                                                                                                                                                                                       SOFTWARE: PA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence 50, Application US/10159901 Publication No. US20030073235A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
                                                                                                                                                                                                                                                                                                                        Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PRIOR APPLICATION NUMBER: 60/294,463
PRIOR FILING DATE: 2001-05-29
NUMBER OF SEQ ID NOS: 57
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CURRENT APPLICATION NUMBER: US/10/159,901
CURRENT FILING DATE: 2002-05-29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT: LAGARIAS, JOHN
APPLICANT: KOICHI, TAKAYUKI
APPLICANT: FRANKENBERG, NICOLE
                                                                                                                                                                                                                                                                                                                                                                                                    LENGTH: 25
TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT: MONTGOMERY, BERONDA
TITLE OF INVENTION: LIGHT CONTROLLED GENE
FILE REFERENCE: 407T-907731US
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Local Similarity
                                                                                                                                                                                                                                                                                                         ocal
                       207
                                                                                               147
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        147
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   238
                                                                                                                                    61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   34 TLRRRKKRFLLRVSAVSYKEFAESALEETRKRIVLEPSHLQEKY---SSMTGLDGKT---
                                                                                                                                                                                                                                              34 TLRRRKKRFLLRVSAVSYKEFAESALEETRKRIVLEPSHLQEKY---SSMTGLDGKT---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          63;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 N
                                                                                                                                                                                                                                                                                                                                                                                                                     257
                                                                                                                                                                                                                                                                                                       Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                        PatentIn
KHKALFS----AFLEYYQAWLEMTIQVREEMEPSHVRANCEAQHKYLTWRAQKDPGHGLL:: | | | : | : | | : | : | : | : |
                                                        LOPAIK-TDEV-HTTHVWDRLIPIFERWRDQLPYGGPIPEEAQPFFSPGFLWTRLPLGEE 178
                                                                                             LNPLHQLTDQTDYQDKYYNKIMSIYHKYAETFPWGGKLTGESIKFFSPLVMWTRFSSSKE 206
                                                                                                                                  TTATWACKTEKFRQVRAACVSAGSAASVLNFVINPKSTYGLPFFGGDLVTFPAGHLLALD 120
                                                                                                                                                                     ELQMLAFKSSKIRLLRSMAIE-NETMQVFDFAGFMEPEYDTPIFCANFFTSTNVNIVVLD 146
                                                                                                                                                                                                           TNQRFKSTDPVNIEGWSWQPFLEDAIKRL-EGLNVEPYPVPDRFLQREDQTGSKSKSIPV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TRFHGSEWTEAYIHTVLFD 256
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  KRLVGEAKAKELLRDFLFN 281
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GDELIQSIVRPAFNDYLDLYLELAASA-ERVTDERSEVLLQGQRKYTDYRAEKDPARGML 237
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            KHKALFS----AFLEYYQAWLEMTIQVREEMEPSHVRANCEAQHKYLTWRAQKDPGHGLL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LQPAIK-TDEV-HTTHVWDRLIPIFERWRDQLPYGGPIPEEAQPFFSPGFLWTRLPLGEE 178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LNPLHQLTDQTDYQDKYYNKIMSIYHKYAETFPWGGKLTGESIKFFSPLVMWTRFSSSKE 206
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TTATWACKTEKERQVRAACVSAGSAASVLNEVINPKSTYGLPEEGGDLVTEPAGHLLALD 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ELQMLAFKSSKIRLLRSMAIE-NETMQVFDFAGFMEPEYDTPIFCANFFTSTNVNIVVLD 146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TNQRFKSTDPVNIEGWSWQPFLEDAIKRL-EGLNVEPYPVPDRFLQREDQTGSKSKSIPV 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GAMBETTA, GREGORY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                       Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                        version 3.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          12.2%;
                                                                                                                                                                                                                                                                                   12.2%; Score 210.5; DB 9; 24.3%; Pred. No. 3e-12; tive 55; Mismatches 126;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          55;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 210.5; DB 9;
Pred. No. 3e-12;
5; Mismatches 126;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      EXPRESSION UTILIZING HETEROLOGOUS PHYTOCHRO
                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                                                                                                                                                                                        Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length
                                                                                                                                                                                                                                                                                                                          257;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      15;
                                                                                                                                                                                                                                                                                     15;
                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                             60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              262
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     87
                                                                                                                                                                                                                                                                                     8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
```

Job time

Search completed: June 24,

2003, 18:46:50

```
Qγ
                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                       Ş
                                                                                                                                                                                                                                                                                                                                                                                                            ; TYPE: PRT ; ORGANISM: Synechococcus sp. US-09-870-406A-36
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         닭
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         В
 В
                               δõ
                                                                   뮹
                                                                                                 δÃ
                                                                                                                                                                  Ş
                                                                                                                                                                                                    뮹
                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-09-870-406A-36
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SOFTWARE: PatentIn version 3.0 SEQ ID NO 36
                                                                                                                                                                                                                                                                                                                                          Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence 36, Application US/09870406A Publication No. US20030104379A1
                                                                                                                                                                                                                                                                                                                                                          Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CURRENT APPLICATION NUMBER: US/09/870,406A
CURRENT FILING DATE: 2002-09-04
PRIOR APPLICATION NUMBER: 60/271,758
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRIOR FILING DATE: 2001-02
PRIOR APPLICATION NUMBER:
PRIOR FILING DATE: 2000-06
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICANT: MONTGOMERY, BERONDA
TITLE OF INVENTION: HY2 FAMILY OF BILIN REDUCTASES
FILE REFERENCE: 407T-907720US
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICANT: LAGARIAS,
APPLICANT: KOICHI,
APPLICANT: FRANKENB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NUMBER OF SEQ ID NOS: 57
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                             LENGTH:
                                                                                                                                                                                                                                                                                                                                                        ocal Similarity
                                                                   179
                                                                                                                                                                    147
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         179
                                                                                                                                      121
 238
                                   263
                                                                                                   207 KHKALFS----AFLEYYQAWLEMTIQVREEMEPSHVRANCEAQHKYLTWRAQKDPGHGLL 262
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         238 TRFHGSEWTEAYIHTVLFD
                                                                                                                                                                                                      61
                                                                                                                                                                                                                                       88
                                                                                                                                                                                                                                                                                                         34 TLRRRKKRFLLRVSAVSYKEFAESALEETRKRIVLEPSHLQEKY---SSMTGLDGKT---
                                                                                                                                                                                                                                                                         N
                                                                                                                                                                                                                                                                                                                                          63;
TRFHGSEWTEAYIHTVLFD
                                                                                                                                                        LNPLHQLTDQTDYQDKYYNKIMSIYHKYAETFPWGGKLTGESIKFFSPLVMWTRFSSSKE 206
                                                                                                                                                                                                    TTATWACKTEKFRQVRAACVSAGSAASVLNFVINPKSTYGLPFFGGDLVTEPAGHLLALD 120
                                                                                                                                                                                                                                     ELOMLAFKSSKIRLLRSMAIE-NETMOVFDFAGFMEPEYDTPIFCANFFTSTNVNIVVLD 146
                                                                                                                                                                                                                                                                       TNQRFKSTDPVNIEGWSWQPFLEDAIKRL-EGLNVEPYPVPDRFLQREDQTGSKSKSIPV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GDELIQSIVRPAFNDYLDLYLELAASA-ERVTDERSEVLLQGQRKYTDYRAEKDPARGML 237
                                 KRLVGEAKAKELLRDFLFN
                                                                   GDELIQSIVRPAFNDYLDLYLELAASA-ERVTDERSEVLLQGQRKYTDYRAEKDPARGML
                                                                                                                                  LQPAIK-TDEV-HTTHVWDRLIPIFERWRDQLPYGGPIPEEAQPFFSPGFLWTRLPLGEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         KRLVGEAKAKELLRDFLFN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               KOICHI, TAKAYUKI
FRANKENBERG, NICOLE
GAMBETTA, GREGORY
                                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2001-02-26
NUMBER: 60/210,286
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2000-06-08
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    JOHN
                                                                                                                                                                                                                                                                                                                                                          24.3%;
                                                                                                                                                                                                                                                                                                                                          55;
                                                                                                                                                                                                                                                                                                                                                            Pred.
                                 281
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         256
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         281
                                                                                                                                                                                                                                                                                                                                                        Score 210.5; DB 9;
Pred. No. 3e-12;
                                                                                                                                                                                                                                                                                                                                          Mismatches
                                                                                                                                                                                                                                                                                                                                          126;
                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                            Length
                                                                                                                                                                                                                                                                                                                                                                            257;
                                                                                                                                                                                                                                                                                                                                          15;
                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                      178
                                                                                                                                                                                                                                                                         60
                                                                   237
                                                                                                                                                                                                                                                                                                          87
```

```
Result
No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Post-processing: Minimum Match 0%
Maximum Match 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Minimum DB seq length: 0
Maximum DB seq length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          OM protein - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                    Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                     157
121.5
110.5
105.5
                                                                                                                                                                       105
104.5
102.5
95.5
95.5
94.5
                                                                                                                                                                                                                                                                                                                                Score
Query
Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-09-870-406A-33
1724
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               June 24, 2003, 18:13:35; Search time 27 Seconds (without alignments) 1171.416 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  BLOSUM62
                                                                                                                                                                                                                                                                                                                                                                                                                            PIR_73:*
1: pir1:*
2: pir2:*
3: pir3:*
4: pir4:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                283224 segs, 96134422 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1 MALSMEFGFSIGSCFKAPNP.....SIIGKSYETRPWDLTGQFIG 329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GenCore version 5.1.6 Copyright (c) 1993 - 2003 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                Length DB
T30905

B97866

F70177

B35147

B3741

A97323

H70415

G86652

A966552

A966552

A966552

A97277
                                                                                                                                                                                                                              AD2269
A54541
S76709
ALBSF
A24549
                                                                                                                                                                                                                                                                                     A46448
                                                                                                                                                                                                                                                                                                                                Ħ
                                                                                                                                                                                                                                                                                                                                                                SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           283224
                                              DNA binding protei
DNA polymerase III
conserved hypothet
GTP-binding protei
conserved hypothet
hypothetical protee
protein g377 - mal
hypothetical prote
hypothetical prote
hypothetical prote
t7123.15 protein
ATP-dependent dsDN
hypothetical prote
hypothetical prote
                                                                                                                                                                                                                                                             hypothetical prote
hypothetical prote
orf236 3' of cpeB
hypothetical prote
alpha-amylase (EC
                                                                                                                                                                                                                             hypothetical prot
alpha-amylase (EC
alpha-amylase (EC
                                                                                                                                                                                                      hypothetical prot
        hypothetical hypothetical
                             unknown protein,
probable osmoprot
                                                                                                                                                                                  transcription-rep
ipaH protein - Sh
                                                                                                                                                                                                                                                                                                                              Description
```

45	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30
87.5	87.5	88	88	88	88	88	88.5	88.5	88.5	88.5	88.5	89	89	89	89
5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.2	5.2	5.2	5.2
1352	602	693	. 549	540	537	518	1827	936	711	549	433	4450	1451	1254	1045
N	N	N	N	N	N	N	N	2	2	_	Ν	N	N	N	ν
G71051	E90568	AI0996	JX0054	A31584	в90598	D84977	T16270	H71728	S66749	A24436	A29626	JX0340	D64203	T24897	н82934
probable ATP-depen	DNA primase [impor	4-alpha-glucanotra	carboxylesterase (	carboxylesterase (	ABC transporter at	glutamate-cysteine	hypothetical prote	2-oxoglutarate deh	hypothetical prote	alpha-amylase (EC	apolipoprotein B -	gramicidin S synth	DNA polymerase III	hypothetical prote	type I restriction

## ALIGNMENTS

RESULT B46448

hypothetical protein (rpcB 5' region) - Synechococcus sp.
C;Species: Synechococcus sp.
C;Species: Synechococcus sp.
C;Date: 10-Jun-1993 #sequence\_revision 18-Nov-1994 #text\_change 08-Oct-1999
C;Accession: B46448; S31066; S31059
C;Accession: B46448; S31066; S31059
J. Biol. Chem. 268, 1226-1235, 1993
A.Title: Rod structure of a phycoerythrin II-containing phycobilisome. I. Organizatio chococcus sp. WH8020.
A;Reference number: A45045; MUID:93123238; PMID:8419325
A;Accession: B46448
A;Status: preliminary; not compared with conceptual translation
A;Molecule type: DNA
A;Residues: 1-257 <WILD
A;Cross-references: EMBL:M95288; NID:9154551; PIDN:AAA27344.1; PID:9154564
A;Experimental source: WH8020

ОУ	. ор	Qy dd	Qy dd	Оу		
263 KRLVGEAKAKELLRDFLFN 281 	207 KHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRANCEAQHKYLTWRAQKDPGHGLL 262 	147 LNPLHQLTDQTDYQDKYYNKIMSIYHKYAETFPWGGKLTGESIKFFSPLVMWTRFSSSKE 206 	88 ELQMLAFKSSKIRLLRSMAIE-NETMQVFDFAGFMEPEYDTPIFCANFFTSTNVNIVVLD 146    :	34 TLRRRKKRFLLRVSAVSYKBFAESALEETRKRIVLEPSHLQEKYSSMTGLDGKT 87   :    :    :  :  :  :  :  :  :  :  :	Query Match 12.2%; Score 210.5; DB 2; Length 257; Best Local Similarity 24.3%; Pred. No. 1.2e-09; Matches 63; Conservative 55; Mismatches 126; Indels 15; Gaps	Plant Mol. Biol. 21, 225-237, 1993 A;Title: Genes of the R-phycocyanin II locus of marine Synechococcus spp., and compar A;Reference number: S31066; MUID:93144698; PMID:8425055 A;Accession: S31066 A;Accession: S31066 A;Residues: 231-257 <del> A;Residues: 231-257 <del> A;Cross-references: EMBL:M95288</del></del>
	262 237	206 178	146 120	87	8	and co

```
멍
                                    QУ
                                                                       뫄
                                                                                              20
                                                                                                                                 ДЪ
                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 3
A46448
orf236 3' of cpeB - Synechococcus sp.
C.Species: Synechococcus sp.
C.Date: 10-Jun-1993 #sequence_revision C.Accession: A46448
R.Wilbanks, S.M.; Glazer, A.N.
                                                                                                                                                               Q
                                                                                                                                                                                                                                                                                      A; Molecule type: nucleic acid
A; Residues: 1-256 <WIL>
                                                                                                                                                                                                                                                                                                                                                               A;Title: Rod structure of a phycoerythrin II-containing chococcus sp. WH8020.
                                                                                                                                                                                                                                                               A; Note:
                                                                                                                                                                                                                                                                            A; Experimental source:
                                                                                                                                                                                                                                                                                                               A; Status: preliminary; not compared with conceptual translation
                                                                                                                                                                                                                                                                                                                                        A; Reference number: A; Accession: A46448
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               C.Species: Synechococcus sp.
C.Date: 30-Sep-1993 #sequence_revision
C.Accession: S31058
R.Wilbanks, S.M.; Glazer, A.N.
submitted to the EMBL Data Library, Oct
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A;Cross-references: EMBL:M95288; NID:gl54551; PIDN:AAA27343.1; PID:gl54563
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A; Molecule type: DNA
A; Residues: 1-236 <WIL>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       hypothetical protein (cpeB 3' region) - Synechococcus sp. (strain WH8020)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A; Reference number: S31047
A; Accession: S31058
                                                                                                                                                                                                                              Query Match
                                                                                                                                                                                                  Matches
                                                                                                                                                                                                                                                                                                                                                                                                      Biol.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
Best Local :
                                                                                                                                                                                                                 JocaL
                                                                                                                                                                                                                                                   imental source: WH8020
sequence extracted from NCBI backbone (NCBIP:121984)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Local Similarity
           191
                                                                                                                                                   110 ETMOVFDFAGFMEDEYDTPIFCAN--FFTSTNVNIVVLDLNPLHQLTDQTDYQDKYYNKI 167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            275
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         114
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        164 YNKIMSIYHKYAETFPWGGKLTG-ESIKFFSP---LVMWTRFSSSKEKHKAL----FSA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   59
                                                                                                                                                                                                  47;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   71 SHLQEKYSSMT------GLDGKTELQMLAFKSSKI------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                4
                                                                                                                                                                                                             Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              60;
YWDLHDNAKSIPSTIPPEEVK----NLQDKYDIYSAERDPAHGLFTSHFGKDWSNRFLHEF
                                                           KELNQRFPD-----LNGEETMRSFDPNQYFSSWLLFCRGGAEQADLSLPKAFSAFLKA 190
                                                                                       MSIYHKYAETFPWGGKLTG-ESIKFFSP---LVMWTRFSSSKEKHKAL----FSAFLEY 218
                   DSLQVFNSVAYPDYNYDHPLMGVDLLWFGARQKLVAVLDFQPLVQ----DKDYLDRYFSGL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LHEFLF 229
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LRDFLF 280
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FLKAYWDLHDNAKSIPSTIPPEEVK---NLQDKYDIYSAERDPAHGLFTSHFGKDWSNRF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FLEYYQAWLEMTIQVREEMEPSHVRANCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A--GDSLQVENSVAYPDYNYDHPLMGVDLLWFGARQKLVAVLDFQPLVQ---DKDYLDRY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AIENETMOVEDEAGEMEPEYDTPIFCAN--FFTSTNVNIVVLDLNPLHQLTDQTDYQDKY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FSGLKELNQRFPD-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SFLNELHSDITKRGGSPLPLPEGLE----ECRSSKSSSVIQSWLWDVPGFRRWRVTRLD
                                                                                                                                                                                                                                                                                                                                                                                                       268,
                                                                                                                                                                                              Conservative
                                                                                                                                                                                                                                                                                                                                                                                                    Glazer, A.N.
8, 1226-1235,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                                                                                                                                A45045; MUID:93123238; PMID:8419325
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      9.28;
                                                                                                                                                                                                          9.1%;
                                                                                                                                                                                                                                                                                                                                                                                                    1993
                                                                                                                                                                                             34;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           41;
                                                                                                                                                                                         Score 157; DB 2; L
Pred. No. 2.6e-05;
4; Mismatches 77;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             -LNGEETMRSFDPNQYFSSWLLFCRGGAEQADLSLPKAFSA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 158; DB 2
Pred. No. 2e-05;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   October
                                                                                                                                                                                                                                                                                                                                                                                                                                       18-Nov-1994 #text_change 23-Mar-1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            30-Sep-1993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1992
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DB 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ; 68
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            #text_change 08-Oct-1999
                                                                                                                                                                                                                       Length 256
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length 236;
                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                phycobilisome.
                                                                                                                                                                                        24;
                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RLLRSM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps

    Organization

 247
                               278
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           214
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       113
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         163
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      105
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                274
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             166
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       58
```

.1

```
A; Description: catalyzes the hydrolysis of internal 1,4-alpha-D-glucosidic A; Pathway: glycogen/starch degradation
                                                                                              A;Cross-references: GB:X59476
A;Experimental source: chromosomal DNA of strain DN1792
C;Comment: Alpha-amylase genes have been found on plasmids
                                             C; Function:
                                                                                                                                                                                                     R;Jorgensen, P.L.; Poulsen, G.B.; Diderichsen, B. FEMS Microbiol. Lett. 77, 271-276, 1991
A;Title: Cloning of a chromosomal alpha-amylase gene A;Reference number: A54541
A;Accession: A54541
                                                                    A; Start codon: GTG
                                                                                          C; Genetics
                                                                                                                                                                     A; Molecule type: DNA
A; Residues: 1-549 < JOR>
                                                                                                                                                                                                                                                                                                                       alpha-amylase (EC 3.2.1.1) precursor - Bacillus stearothermophilus N;Alternate names: 1,4-alpha-D-glucan glucanohydrolase C;Species: Bacillus stearothermophilus C;Date: 28-Oct-1994 #sequence_revision 18-Aug-1995 #text_change 13-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               R.Kaneko, T.; Nakamura, Y.; Wolk, C.P.; Kuritz, T.; Sasamoto, S.; Watanabe, A.; Irigu Nakazaki, N.; Shimpo, S.; Sugimoto, M.; Takazawa, M.; Yamada, M.; Yasuda, M.; Tabatt DNA Res. B. 205-213, 2001
A;Title: Complete Genomic Sequence of the Filamentous Nitrogen-fixing Cyanobacterium A;Reference number: AB1807; MUID:21595285; pMID:11759840
A;Accession: AD2269
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ωy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A;Cross-references: GB:BA000019; PIDN:BAB75406.1; PID:g17132841; GSPDB:GN00179
A;Experimental source: strain PCC 7120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A;Status: preliminary
A;Molecule type: DNA
A;Residues: 1-245 <KUR>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      C; Accession: AD2269
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A;Note: Nostoc sp. strain PCC 7120 is a synonym of Anabaena sp. strain PCC 7120 C;Date: 14-Dec-2001 #sequence_revision 14-Dec-2001 #text_change 30-Jun-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         hypothetical protein alr3707 [imported] - Nostoc sp. C;Species: Nostoc sp. strain PCC 7120 is a synonym of An
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     γ
                                                                                                                                                                                                                                                                                                              Accession: A54541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   182 QVHCQGAIAASPVSAEQKQQILAGQHNYCSKQQQNDKTRRVLEKAFGVDWAENYMTTVLF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  135
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   242 D 242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         281 N 281
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        168
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       109 NETMOVFDFAGFMEPEYDTPIF-CANFFTSTNVNIVVLDLNPLHQLTDQTDYQDKYYNKI 167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               279
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       52
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             248
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            52; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EMTIQVREEMEPSHVRANCE---AQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLRDFLF 280
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TSLNTLNESQPRELPEWG-----NIFSDFCIFVRPSSPEEE----AMFLGRVREFL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MSI----YHKYAETFPWGGKLTGESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RQLADCIEEVWHQHLDLSPYHLPAELGYVEGRLEGEKLTIENRCYQTPQFRKMHLELAKV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           KEFAESALEETRKRIVLEPSHLQEKYSSMTG-LDG-KTELQMLAFKSSKIRLLR-SMAIE 108
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GNMLDILHCVMFPRPEYDLPMFGCDLVGGRGQISAAIADLSPVH--LDRT-LPESYNSAL 134
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           분드분
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               280
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           7.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       49;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 121.5; DB Pred. No. 0.019;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     113;
                                                                                                                                                                                                                                                                                                                           #text_change 13-Jun-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2
                                                                                                                                                                                                                                              from
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (strain PCC 7120)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length
                                                                                                                                                                                                                                          Bacillus stearothermophilus
                                                                                                       and
                                                                                                  in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   27;
                                                                                                  multiple
                                                                                                                                                                                                                                                                                                                                                                                     (strain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                     bonds
                                                                                                  copies
                                                                                                                                                                                                                                                                                                                                                                                     DN1792)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              223
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    77
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ; Irigu
Tabata
                                                                                                  9
```

245 281

DY-5) plas

```
A; Reference number: $74322
A; Accession: $76709
A; Status: preliminary
A; Molecule type: DNA
N: Basidues: 1-248 (KAN)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 6
$76709
Synechocystis sp. (strain PCC 6803)
C;Species: Synechocystis sp.
C;Species: Synechocystis sp.
A;Variety: PCC 6803
C;Date: 25-Apr-1997 #sequence_revision 25-Apr-1997 #text_change 08-Oct-1999
C;Accession: $76709
C;Accession: $76709
C;Accession: $76709
C;Accession: $75709
C;Accession: $75709
DNA Res. 3, 109-136, 1996
DNA Res. 3, 109-136, 1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       C;Superfamily: alpha-amylase, amyloliquefaciens type; alpha-amylase core homology C;Keywords: extracellular protein; glycosidase; heat-stable protein; hydrolase; pc F;1-34/Domain: signal sequence #status predicted <SIG> F;35-549/Product: alpha-amylase #status predicted <MAT> F;235-368/Domain: alpha-amylase core homology <AMY> F;139,237,272/Binding site: calcium (Asp, Asp, His) #status predicted F;268,298,365/Active site: Asp, Glu, Asp #status predicted
                                                                                                                                                     δÃ
                                                                                                                                                                                                                                                                                                                                                                        A;Residues: 1-248 <KAN>
A;Cross-references: EMBL:D64004; GB:AB001339; NID:g1001701; PIDN:BAA10653.1; PID:d101130
A;Note: the nucleotide sequence was submitted to the EMBL Data Library, June 1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                               δõ
                                                                                                            В
                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                        QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               В
                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A; Title: Sequence analysis of the genome of the unicellular cyanobacterium Synechocystis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Š
                                                                                                                                                                                                                                                                                                                                           Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local
                                                                                                                                                                                                                                                                                                                      Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           492
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                432
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   284
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        380
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                326
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          273
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 229
                                                                                                                                                                                                       27
                                                                                                               87
                                                                                                                                                                                                                                                    58
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            50
                                                                                                                                                                                                                                                                                                                      Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NYDYLMYADLDMDHPEVVTELKNWGKWYVNTTNIDG------FRLDAVKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SYKEFAESALEETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIEN
                                                                                                                                                       FDFAGFMEPEYDTPIF-CANFFTSTNVNIVVLDLNPLHQLTDQTDYQ-DKYYNKIMS---
                                                                                                                                                                                                    AIAASWQSLPLKPYQLPEDLGYVEGRLEGEKLVIENRCYQTPQFRKMHLELAKVGKGLDI
                                                                                                                                                                                                                                                 ALEETRKRIVLEPSHLQEKYSSMTG-LDG-KTELQMLAFKSSKIRLLR-SMAIENETMQV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DELGTKTFIDYFPEYQTEDGTVS-----DKRSIIGKSYETRPWDLTGQFI 328
                                                               --IYHKYAETFPWGGKLTGESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DTVTINS--DGWGEFKVNGGSVSVWVPRKTTVSTIARPITTRPW--TGEFV 538
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TQHDYLDHSDIIGWTREGGTEKPGSGLAALITDGPGGSKWMYVGKQHAGKVFYDLTGNRS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         -QHKYLT-----WRAQ---KDPGHGLLKRL-----VGEAKAKELLRDFLFNGV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ----FKPLA-YAFILTRQEGYPCVF--YGDYYGIPQYNIPSLKSKIDPLLIARRDYAYG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRANCEA--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             HNKFYTASKSGGAFDMRTLMTNTLMKDQPTLAVTFVDNHDTEPGQALQSWVDPW-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       IKESEFPDWLSYVRSQTGKPLFTVGEYWS-----YDINKLHNYITKTDGTMSLFDAPL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ETMQVF-DFAGFMEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTD-----Y
                                                                                                                                                                                                                                                                                                   Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             S74322;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              6.48;
                                                                                                                                                                                                                                                                                                                    6.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MUID:97061201;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                H.; Tanaka, A.; Asamizu, E.; Nakamura, Y.; Miyajima, N. Takeuchi, C.; Wada, T.; Watanabe, A.; Yamada, M.; Yasud
                                                                                                                                                                                                                                                                                                                    Score 105.5; D
Pred. No. 0.39;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Score 110.5; D
Pred. No. 0.44;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EIFSEYCLFIRPSNVTEEER-FVQRVVDFLQIHCHQSI
                                                                                                                                                                                                                                                                                              Mismatches 110;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PMID:8905231
                                                                                                                                                                                                                                                                                                                                           DB 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DB 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         120;
                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                           Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length
                                                                                                                                                                                                                                                                                                                                           248;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       113;
                                                                                                                                                                                                                                                                                              25;
                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                  227
                                                                                                                                                          169
                                                                                                                                                                                                                                                 114
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                491
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          109
                                                                                                            141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   431
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                379
                                                                                                                                                                                                                                                                                            10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              polysac
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Yasuda
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A,Description: catalyzes the hydrolysis of internal 1,4-alpha-D-glucosidic A;Pathway: glycogen/starch degradation C;Superfamily: alpha-amylase, amyloliquefaciens type; alpha-amylase core ho C;Keywords: extracellular protein; glycosidase; heat-stable protein; hydrol F;1-34/Domain: signal sequence #status predicted <SIG-F;35-548/Product: alpha-amylase #status experimental <MAT>F;35-549/Domain: alpha-amylase #status experimental <MAT>F;139,237,272/Binding site: calcium (Asp. Asp. His) #status predicted F;268,298,365/Active site: Asp. Glu, Asp #status predicted
                                                                              Qγ
                                                                                                                                                                          Š
                                                                                                                                                                                                                                                               ρ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  R;Tsukagoshi, N.; Iritani, S.; Sasaki, T.;
J. Bacteriol. 164, 1182-1187, 1985
A;Title: Efficient synthesis and secretion
A;Reference number: A91804; MUID:86059211;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  C;Accession: A91999; B91999; A91804; A00845
R;Ihara, H.; Sasaki, T.; Tsuboi, A.; Yamagata, H.;
J. Biochem. 98, 95-103, 1985
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             alpha-amylase (EC 3.2.1.1) precursor - Bacillus stearothermophilus (strain | N;Alternate names: 1,4-alpha-D-glucan glucanohydrolase C;Species: Bacillus stearothermophilus C;Date: 30-Jun-1987 #sequence_revision 30-Jun-1987 #text_change 16-Feb-1997
                                     밁
                                                                                                                                  ₽
                                                                                                                                                                                                                         ₽
                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                       Qy
                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                               ρ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A; Start cod
C; Function:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A; Genome: plasmid
A; Start codon: GTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A;Molecule type: DNA
A;Residues: 1-29,'Q',31-75,'W',77-122
C;Comment: Alpha-amylase genes have be
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A; Molecule type: protei
A; Residues: 35-48 <IH2>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A; Molecule type: DNA
A; Residues: 1-548 <IH1>
A; Cross-references: GB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A; Reference number: A; Accession: A91999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A; Title: Complete nucleotide sequence of a thermophilic alpha-amylase gene: homology A; Reference number: A91999; MUID:86008166; PMID:3876333
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A; Accession: B91999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A; Experimental source: plasmid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A; Accession:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A; Contents: pBAM101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A; Experimental source: strain DY-5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Local
                                                                                                                                                                               185
                                                                                                                                                                                                                            327
                                                                                                                                                                                                                                                                                                                                                                                                           229 NYDYLMYADLDMDHPEVVTELKNWGKWYVNTTNIDG--
                                                                                                                                                                                                                                                                                                                                                                                                                                                        50
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A91804
GVDELGTKTFIDYFPEYQTEDGTVS-----DKRSIIGKSYETRPWDLTGQFI 328
                                          YGTQHDYLDHSDIIGWTREGVTEKPGSGLAALITDGAGRSKWMYVGKQHAGKVFYDLTGN
                                                                                     ---QHKYLT-----WRAQ---KDPGHGLLKRL---
                                                                                                                                                                               TGESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRANCEA
                                                                                                                                                                                                                            ----NKFYTASKSGGAFDMRTLMTLMKDQPTLAVTFVDNHDTNPAKRCSHGRPW----
                                                                                                                                                                                                                                                                                                                    IKFSFFPDWLSYVRSQTGKPLFTVGEYWSYDINKLHNYITKTNGTMSLFDA-PLH-----
                                                                                                                                                                                                                                                                                                                                                              ETMQVF-DFAGEMEPEYDTPIFCA-----NFFTSTNVNIVVLDLNPLHQLTDQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                      SYKEFAESALEETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIEN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        -VAEPLSEAQTLEHRQGQIHYCQQQQKNDKTRRVLEKAFGEAWAERYMSQVLFD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     QVREEMEPSHVRANCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLRDFLFN
                                                                                                                                  ----FKPLA-YAFILTRQEGYPCVF--YGDYYGIPQYNIPSLKSKIDPLLIARRDYA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GB:X02769
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        6.1%; Score 105; 19.3%; Pred. No. 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        рн1300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   50;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            been
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Mismatches
                                                                                                                                                                                                                                                                       --NKIMSIYHKYAETF---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               <TSU>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          from
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            found on
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      of a thermophilic alpha-amylase PMID:2999073
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Takemura,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        strain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DB 1; Length 548;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   117;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         plasmids and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DY - 5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Tsukagoshi,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         T.; Ihara,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        alpha-amylase core homology
stable protein; hydrolase; pour
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Indels 118;
                                                                                       -VGEAKAKELLRDFLFN
```

in multiple copies

9

polys

--- PWGGKL

184

281

428 244 378 FRLDGLKH

272

156

326

Gaps

17;

109

H.;

Idota,

bу

protein Yamaga

В

```
δõ
                                                                                                                                                                                                               Ъ
                                                                                                                                                                                                                                                  Qγ
                                                                                                                                                                                                                                                                                        В
                                                                                                                                                                                                                                                                                                                     Ϋ́
                                                                                                                                                                                                                                                                                                                                                            망
                                                                                                                                                                                                                                                                                                                                                                                          γ
                                                                                                                                                                                                                                                                                                                                                                                                                                                      C/Superfamily: alpha-amylase, amyloliquefaciens type; alpha-amylase core homology (C/Keywords: extracellular protein; glycosidase; heat-stable protein; hydrolase; pc. 13-34/Domain: signal sequence #status predicted <GTG>
F/35-549/Product: alpha-amylase #status predicted <MAT>
F/235-368/Domain: alpha-amylase core homology <AMY>
F/339,337,272/Binding site: calcium (Asp, Asp, His) #status predicted F/268,298,365/Active site: Asp, Glu, Asp #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A;Description: Catalyzes the hydrolysis of internal 1,4-alpha-D-glucosidic bonds
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              C; Function:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A;Start codon: GTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A;Cross-references: GB:M29578; NID:9142484; PIDN:AAA22228.1; PID:9142486
A;Experimental source: strain 799
C;Comment: Alpha-amylase genes have been found on plasmids and in multip
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A;Molecule type: DNA
A;Residues: 536-549 <RE2>
                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A/Residues: 1-549 GRAN

A/Cross-references: GB:M13255; NID:9142512; PIDN:AAA22241.1; PID:9142513

A/Experimental source: genomic DNA of strain NZ-3

R/Satch, H.; Nishida, H.; Isono, K.

J. Bacteriol. 170, 1034-1040, 1988

A/Reference number: 130501; MUID:88139156; PMID:3257753
                                                                                                                                                                                                                                                                                                                                                                                                                                   Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         alpha-amylase (EC 3.2.1.1) precursor - Bacillus stearothermophilus (strain NZ-3) N;Alternate names: 1,4-alpha-D-glucan glucanohydrolase C:Species: Bacillus stearothermophilus (c:Date: 30-Jun-1988 #sequence_revision 18-Aug-1995 #text_change 18-Jun-1999 C:Accession: A24549; I39501; I3970 R:Gray, G.L.; Mainzer, S.E.; Rey, M.W.; Lamsa, M.H.; Kindle, K.L.; Carmona, C.; Requadt, A:Title: Structural genes encoding the thermophilic alpha-amylases of Bacillus stearothe A:Accession: A24549
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Status: translated from GB/EMBL/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ;Residues: 536-549 <RES>
;Cross:Teferences: GB:M29577; NID:gl42476; PIDN:AAA22225.1; PID:gl42478
;Experimental source: strain DY-5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Status: preliminary; translated from GB/EMBL/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Molecule type:
Residues: 1-549
                                      429 AYGTOHDYLDHSDIIGWTREGVTEKPGSGLAALITDGPGGSKWMYVGKOHAGKVEYDLTG
                                                                                    244 A---QHKYLT-----WRAQ---KDPGHGLLKRL----
                                                                                                                                          184 LTGESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRANCE
                                                                                                                                                                                                                                                  273 IKFSFFPDWLSYVRSQTGKPLFTVGEYWSYDINKLHNYITKTNGTMSLFDA-PLH-----
                                                                                                                                                                                                                                                                                 110 ETMQVF-DFAGFMEDEYDTPIFCA------NFFTSTNVNIVVLDLNPLHQLTDQ 156
                                                                                                                                                                                                                                                                                                                     229 NYDYLMYADLDMDHPEVVTELKNWGKWYVNTTNIDG-----FRLDAVKH 272
                                                                                                                                                                                                                                                                                                                                                      50 SYKEFAESALEETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIEN 109
                                                                                                                                                                                                                                                                                                                                                                                                                           69;
                                                                                                           -----FKPLA-YAFILTRQEGYPCVF--YGDYYGIPQYNIPSLKSKIDPLLIARRDY
                                                                                                                                                                              ----NKFYTASKSGGAFDMSTLMNNTLMKDQPTLAVTFVDNHDTEPGQALQSWVDPW----
                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             6.1%; Score 104.5; I
19.5%; Pred. No. 1.4;
ative 49; Mismatches
                                                                                                                                                                                                               ---NKIMSIYHKYAETF------PWGGK 183
                                                                                                                                                                                                                                                                                                                                                                                                                                   DB 1; Length 549;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       on plasmids and in multiple copies on
                                                                                                                                                                                                                                                                                                                                                                                                117; Indels 119;
                                                                         -----VGEAKAKELLRDFLF 280
                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 537
                                                                                                                                                                                                                                                    326
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    polysac
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ē
                                                                                              C; Keywords:
                                                                                                                                                                              C;Accession: B97866
R:Ogata, H.; Audic, S.; Renesto-Audiffren, P.; Fournier, P.E.; Barbe, V.; Samson, Science 293, 2093-2098, 2001
A.Title: Mechanisms of Evolution in Rickettsia conorii and Rickettsia prowazekii.
A;Reference number: A97700; MUID:21442074; PMID:11557893
                                                                                                                                  A;Gene: dnaG
                        Query Match
Best Local Sim
Matches 77;
                                                                                                                                                             A; Cross-references:
                                                                                                                                                                             A; Molecule type: DNA
A; Residues: 1-595 <KUR>
                                                                                                                                                                                                                                                                                                DNA primase (EC 2.7.7.-) [imported] - Rickettsia conorii (strain Malish C;Speciaes: Rickettsia conorii (c;Date: 30-Sep-2001 #sequence_revision 30-Sep-2001 #text_change 22-Oct-2 C;Accession: B97866
                                                                                                   Superfamily: DNA primase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ŋ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                γ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Дb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   γQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ωy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A;Cross-references: EMBL:AF005383; NID:g2645411; PID:g2645412; PIDN:AAB87367.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              C;Accession: T30905
R;Te'o Jr., V.S.; Gibbs, M.D.; Saul, D.J.; Bergquist, submitted to the EMBL Data Library, May 1997
A;Reference number: Z20932
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A; Molecule type: DNA
A; Residues: 1-311 <TEO>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           hypothetical protein - Caldocellum saccharolyticum (fragment)
C:Species: Caldocellum saccharolyticum
C:Date: 22-Oct-1999 #sequence_revision 22-Oct-1999 #text_change
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A/Status: preliminary; translated from GB/EMBL/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              T30905
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Local
                                                                                  nucleotidyltransferase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       280 FNGVDELGTKTFIDYFPEYQTEDGTVSDKRS 310
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  242 WLDDLKKYYKELYPYLSKIK----NKKFLEHRLLKE-GLYLVK---
                 Similarity 20.077; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         222 WIEMTIQVREEMEP--SHVRANCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLRDFL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  158 EIV-----DIPIYSSKFAIE-------DYEIPEYQMVLRGY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 112 MOVFDFAGFMEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTDYQDKYYNKINSIY 171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           118 RQINRLQTEKIFE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  57 SALEETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAF-KSSKIRLL----RSMAIENET 111
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         66;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  489 NRSDIVTINS--DGWGEFKVNGGSVSVWVPRKTTVSTIAWPITTRPW--TGEFV 538
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      281 NGVDELGTKTEIDYFPEYQTEDGTVS-----DKRSIIGKSYETRPWDLTGQFI 328
                                                                                                                                                                                                                                                                                                                                                                                                                                                  FEG----GTEIIINYTSTDQRVYNTVVKARN 306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               IPYSTPSVNDYSSEWLWKLKVLESGSYIKF----TWTARNEDELKETICDYLYSSNYKL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     YSPATCYPDDDYPYLFMLSPNYVGRFVKSAIPSKLNFT----KNISISSISKMLYSDFGT 117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FSIGSCEKAPNPPVLISASPN------KINFTLRRRKKRFLLRVSAVSYKEFAE 56
                                                                                                                                GB:AE006914; PIDN:AAL03868.1; PID:g15620472; GSPDB:GN00173
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                             #sequence_revision 30-Sep-2001 #text_change 22-Oct-2001
                                5.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               5.9%;
                 60;
       Score 95.5; DI
Pred. No. 8.2;
60; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score 102.5;
Pred. No. 0.9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    -----QIVGYIKNRHYNLLLTEPNGYLITNAS 157
                                      DB 2;
       147;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     .92;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      106;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DB 2;
                                  Length 595;
   Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 311;
101;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                115;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           22-Oct-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
```

279

186

δĀ 밁

Gaps

17;

Б

```
A; Experimental source: strain B31
C; Superfamily: transcription-repair coupling protein C; Keywords: ATP; DNA repair; leucide zipper; nucleotif E; 610-617; Region: nucleotide-binding motif A (P-loop) E; 707-712; Region: nucleotide-binding motif B F; 711-714; Region: DEAD/H motif #status atypical
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      transcription-repair coupling factor (mfd) homolog - Lyme disease spirochete C; Species: Borrelia burgdorferi (Lyme disease spirochete)
C; Date: 10-Sep-1999 #sequence_revision 10-Sep-1999 #text_change 19-Jan-2001
C; Accession: F70177
R; Fraser: C. C.; Casjens, S.; Huang, W.M.; Sutton, G.G.; Clayton, R.; Lathigra, R.; Bon, D.; Peterson, J.; Kerlavage, A.R.; Quackenbush, J.; Salzberg, S.; Hanson, M.; Bowman, C.; Garland, S.; Fujii, C.; Cotton, M.D.; Horst, K.; Roberts, K.; Hatch, Nature 390, 580-586, 1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A;Status: preliminary; nucleic acid sequence not shown; translation not shown A;Molecule type: DNA A;Residues: 1-1125 <KLE> A;Cross-references: GB:AE001163; GB:AE000783; NID:g2688541; PIDN:AAC66973.1;
                                                                                                                                                                                          ρ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A; Authors: Smith, H.O.; Venter, J.C.
A; Title: Genomic sequence of a Lyme disease spirochaete,
A; Reference number: A70100; MUID: 98065943; PMID: 9403685
A; Accession: F70177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               γQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Š
                         Ş
                                                           뫄
                                                                                              · Q
                                                                                                                                                     망
                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                      80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Вb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Š
                                                                                                                                                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                264
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      135
                             225
                                                                                                                                                                                                        123
                                                                                                                                                                                                                                               133 KNTLLKNIYKIEKNTNINTADIEKTLITLGYEKTLRVTIPGEFTVKGEIIDIYPFG----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           162
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              102
                                                                                                                                                                                                                                                                                             64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            75
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     46
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               25 VALTRKSGNYVGLCPFHQEKTP-----SFTVSNSKRFFYCFGCKAAGDVIKFTSN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ш
                                                                                                                                                                                                                                                                                                                                                                Similarity
MTIQVREEMEPSHVRANCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLRDFLFNGVD:::||::||::|||:::||:::
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 KYYNKI-MSIYHKYAETFPWGGKLTGESIKFFSPLVMWTRFSSSKE---KHKALFSAF--
: |:| : | : | : | : :||: |::
                                                                                                                                                                                                                                                                                           KRIVLEPSHLQEKYSSMTGLDGKTELQMLAF-KSSKIRLLRSMAIENETMQVFDFAGFME
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RLVGE-AKAKELLRDF----LFNG-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LRSMAIENETMQVFDFAGFMEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTDYQD 161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ISGLSYNESAIKLAIDYGIEIPKLTAKQKEFYEESDEILNILELANKFFRTQLTPEILHY 134
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 VSAVSYKEFAESALEETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSK----IRL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MALSMEFGFSIGSC-FKAPNPPVLISASPNKINFTLRRRKK------RFLLR
                                                                     KIKSVEYKKILEELDF - - KKETKTEEMFYPLVANTYLGDEIEKHTPIVNFEINNFEKEIE
                                                                                                          KIMSI-YHKYAETFPWGGKLTGESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLE
                                                                                                                                                                                                   PEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTD--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               -LIDKRISLSEMIWHIEYSGKSFKT 375
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CLDGDNAGIKASIRTINLALPLINSEKKISFIRLPSGLDPDDAVNKNGADFFAK---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NHSILVEGYFDVIALHQAGFSETV-----ASLGTSVTENHLHKLWRA----GDEIIL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LFSNRITIPIRNIYNKIVGFGGRVLGEGLPKYLNSPETTVFQKSETLYGEHKAISSSYKK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LHERGITEETVKEFSI-GF-APKNNK---FEKFFHDKNIDIIKLGKAGLIGKRENGEIYN
                                                                                                                                                        -- EQNPIRIALNEDKIE----EIKKENPLTQLKHDNEILEFQILPKKEIIWDDKTINTLKT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                            5.5%;
                                                                                                                                                                                                                                                                                                                                     Score 95.5; DB
Pred. No. 19;
43; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GKSYET
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          nucleotide binding;
                                                                                                                                                                                                                                                                                                                                                                                   В
                                                                                                                                                                                                                                                                                                                                         107;
                                                                                                                                                                                                                                                                                                                                                                                ٠.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           -VDELGTKTFIDYFPEYQTEDG
                                                                                                                                                                                                                                                                                                                                                                                Length 1125;
                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Borrelia burgdorferi
                                                                                                                                                                                                   ---YQDKYYN----
                                                                                                                                                                                                                                                                                                                                       45;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          P-loop; transcription
                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 263
                                                                     301
                                                                                                                                                                                                   165
                                                                                                                                                                                                                                               188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PID:g26885
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               White Vugt, B.
DNA-binding protein LAG-1 - Caenorhabditis elegans C;Species: Caenorhabditis elegans C;Date: 29-Oct-1999 #sequence_revision 29-Oct-1999 C;Accession: T33741
```

```
RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      C;Species: Shigella flexneri
C;Date: 03-Aug-1990 #sequence_revision 12-Apr-1996 #text_change
C;Accession: S18248; B35149
                                                                                                                                                                                                                                                                                                                                                                                                                                            δã
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT 12
B35149
ipaH protein - Shigella flexneri
                                                                                                                                                                                                   Ş
                                                                                                                                                                                                                                                                              Š
                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                Ş
                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A; Molecule type: DNA
A; Residues: 1-208 <HAR>
A; Cross-references: GB:M32063;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A; Reference number: A35149; MUID: 90202708; A; Accession: B35149
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      R; Venkatesan, M.M.; Buysse, J.M.; Hartman, A.B. Mol. Microbiol. 5, 2435-2445, 1991
A;Title: Sequence variation in two 1paH genes of Shigella A;Reference number: S18248; MUID:92167809; PMID:1791758
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                               δÃ
                                                                                                                                                             밁
                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A;Gene: ipaH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A; Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A;Title: Sequence and molecular characterization of a multicopy invasion plasmid A;Reference number: A35149; MUID:90202708; PMID:1690703
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                R; Hartman, A.B.; Venkatesan, M.; Oa
J. Bacteriol. 172, 1905-1915, 1990
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A;Cross-references: GB:M76445; NID:g152751; PIDN:AAA26528.1; R;Hartman, A.B.; Venkatesan, M.; Oaks, E.V.; Buysse, J.M.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A; Molecule type: DNA
A; Residues: 1-574 <VEN>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A; Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A; Accession: S18248
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches
                                                                                                                                                                                                                                             320
                                                                                                                                                                                                                                                                                     203
                                                                                                                                                                                                                                                                                                                                                                     160
                                                                                                                                                                                                                                                                                                                                                                                                          232
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      127 LNISFNRNL-SCLPS-LPPYLQSLSARFNSLETLPELPSTLTILRI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              61 ETRKRIVLE-PSHLQEKYSSMTGLDGKTE----LQMLAFKSSKIRLLRSMAIENETMQVF 115
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    5.5%;
Similarity 21.4%;
                                                                               LHFVDEIEVYLAFQTMLAEKLQLSTAVKEMRFYGVSG
                                                                                                                     KTFIDYFPEYQTEDGTVSDKRSIIGKSYETRPWDLTG
                                                                                                                                                                                                   CEAQHKYLTWRAQK----
                                                                                                                                                                                                                                             -EHEEHANTFSAFLDRLSDTVSARNTSGFREQVAAWLEKLSASAELRQQSFAVAADATES
                                                                                                                                                                                                                                                                                   SSKEKHKALFSAFL---
                                                                                                                                                                                                                                                                                                                                                                  DFAGFMEPEYDTPIFCANFFTSTNVNIVVLDL-----NP-----LHQLTDQTDY 159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GNRLTVLPELPHRLQELFVSGNRLQELPEFPQSLKYLKVGENQLRRLSRLPQELLALDVS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LSMEFGFSIGSCFKAPNPPVL--ISASPNKINFTLRRKKRFLLRVSAVSYKEFAESALE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ELGTKTFIDY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SLKSKETIEF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ---KIHQEYEKLYKEAE-EAGKNII------DP-----KRILLNYKTFNLKSDVLFSKIK 346
                                                                                                                                                           CE-DRVALTWNNLRKTLLVHQASEGLFDNDTGALLSLGREMFRLEILEDI--
                                                                                                                                                                                                                                                                                                                             HGP-----QIYFSMSD-------GQQNTLHRPLADAVTAWFPENKQSDVSQIWHAF-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                          -NLLTSLPENIITLPICTNVNISGNPLSTRVLQSLQRLTSSPDY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NID:g152746; PIDN:AAA26527.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Score 95; DB:
Pred. No. 8.5;
                                                                                                                                                                                                   -----DPGHGLLKRLVGEAKAKELLRDFLFNGVDELGT 288
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Mismatches
                                                                                                                                                                                                                                                                                     ----EYYQAWLEMTIQVREEMEPSHVRA----N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DB 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    145;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 574
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             flexneri
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PID:g152748
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PID:g152752
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    126;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             03-Dec-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ç
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             and homology
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ---E
                                                                                                                                                                                                                                                                                   241
                                                                                                                                                                                                                                                                                                                             319
                                                                                                                                                                                                                                                                                                                                                                                                        275
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          231
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ៩
```

#sequence\_revision 29-Oct-1999

#text\_change

29-Oct-1999

```
R;Rohlfing, T.; Murray, J.; Antonio, B.
submitted to the EMBL Data Library, October 1998
A;Description: The sequence of C. elegans cosmid K08B4
A;Reference number: Z21395
A;Accession: T33741
A;Status: preliminary; translated from GB/EMBL/DDBJ
A;Molecule type: DNA
A;Residues: 1-649 <ROH>
A;Experimental source: Strain Bristol N2; clone K08B4
C;Genetics: A;Experimental source: strain Bristol N2; clone K08B4
A;Gene: lag-1; CESP:K08B4.1
A;Map position: 4
A;Introns: 30/2; 43/1; 67/3; 89/3; 136/1; 198/2; 232/2
        밁
                                        Qγ
                                                                                                                                                           A; Gene: CAC3442
C; Superfamily:
                                                                                                                                                                                                           A;Molecule type: DNA
A;Residues: 1-1452 <KUR>
A;Residues: 1-1452 <KUR>
A;Cross-references: GB:AE001437; PIDN:AAK81372.1; PID:g15026532; GSPDB:GN00168
A;Experimental source: Clostridium acetobutylicum ATCC824
                                                                                                                                                                                                                                                                                        R;Nolling, J.; Breton, G.; Omelchenko, M.V.; Markarova, K.; Daly, M.J.; Bennett, G.N.; Koonin, E.V.; Smith, D.R. J. Bacteriol. 183, 4823-4838, 2001
A;Title: Genome Sequence and Comparative Analysis of the A;Reference number: A96900; MUID:21359325; PMID:21359325 A;Accession: A97323
A;Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                            DNA polymerase III (alpha subunit) [imported] - Clostridium acetobutylicum C;Species: Clostridium acetobutylicum C;Date: 14-Sep-2001 #sequence_revision 14-Sep-2001 #text_change 30-Sep-2001 C;Accession: A97323
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RESULT
A97323
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               δÃ
                                                                                                    Query Match
Best Local
                                                                                  Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
                                                                                                                                                                                 CAC3442
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    233
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    101
27 LKKKSKRLEMKISSDKYIEIKEF-ERLNEFIRKRFALNDSVIEVNY--VDGTDKKPIEDE
                                            35
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              63 RKRIVLEP---SHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIENETMQVFDFAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              42
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         76;
                                                                                                    Similarity
                                  LRRRKKRFLLRVSAVSY---KEFAESALEETRKRIVLEPSHLQEKYSSMTGLDGK---TE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AKRMRLSPSTSSH-SDVASTSKGTNGQDQ-----SKNSPTNSDPFYTIGQSTPNTSSFLD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         IGSCFKAPNPPVLISASPNKIN-----FTLRRKKRFLLRVSAVSYKEFAESALEET
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  VD-----ELGTKTFIDYFPEYQTEDGTVSD----KRSIIGKSYETRPWDLTGQF 327
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FFCPPPCIYLIGQGWKLKKDRVAQLYKTLKASAQKDAAIENDPIHEQQATELVA-YIGIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           WGGKLTGESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EMEPEYDTP I FCANFFTSTNVN I VYLDLNPLHQLTDQTDYQDKYYNK I MSIYHKYAETFP
                                                                                                                                                     DNA-directed DNA polymerase III alpha chain polC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SDTSERQQLDFSTGKVRHPGDQRQDPNIYDYCAAKTLYISDSDKRKYFDLNAQF 345
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ANCEAQHKYLT --- WRAQKDPGHGLLKRL -----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ---SLIGDSVQSLTSDRM-IDFLSNKEKYECVISIF------HAKVAQKSYGNEKR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TSNSSFGAP-----STVV-----ANPM-----TNYQLAFQAKLGSLH-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        IEAMFQSVSPLAGVAAAPSQIAALQQIQALMTFQMQQNNLFPKIDTISKSPTPELA-SPS
                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         43/1; 67/3; 89/3; 136/1; 198/2; 232/2; 320/3; 428/1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       5.5%;
                                                                                                5.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   55; Mismatches 136;
                                                                              52;
                                                                          Score 94; DB
Pred. No. 36;
52; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 94.5;
Pred. No. 11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PIDN:AAC68978.1; G
tol N2; clone K08B4
                                                                                                                DB 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DB 2; Length 649;
                                                                              101;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           K08B4
                                                                                                                Length 1452;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  -----VGEAKAKELLRDFLFNG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GSPDB:GN00022; CESP:K08B4.1
                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels
                                                                                                                                                                                                                                                                                                                                                                                                          K.S.;
                                                                                                                                                                                                                                                                                                                                                Solvent-Producing Bacterium
                                                                                                                                                                                                                                                                                                                                                                                                        Zeng,
                                                                          90;
                                                                                                                                                                                                                                                                                                                                                                                                      ρ.,
                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         471/3;
                                                                                                                                                                                                                                                                                                                                                                                                        Gibson,
                                    88
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                282
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       232
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            291
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             62
                                                                                                                                                                                                                                                                                                                                                                                                        R.;
                                                                                                                                                                                                                                                                                                                                                                                                          Lee,
                                                                                                                                                                                                                                                                                                                                                  G
```

s

Search completed: Job time : 29 sec:

June

24,

2003,

18:37:56

```
밁
                                   δã
                                                                          В
                                                                                                           Q
                                                                                                                                               В
                                                                                                                                                                              Š
                                                                                                                                                                                                                    뮹
                                                                                                                                                                                                                                                   δã
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A;Title: The complete genome of the hyperthermophilic bacterium A;Reference number: A70300; MUID:98196666; PMID:9537320 A;Accession: H70415
                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                        δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A;Cross-references: GB:AE000735; NID:g2983749; A;Experimental source: strain VF5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A; Molecule type: DNA
A; Residues: 1-374 <AQF>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  conserved hypothetical protein aq_1336 - Aquifex aeolicus C;Species: Aquifex aeolicus C;Date: 08-May-1998 #sequence_revision 08-May-1998 #text_c;Accession: H70415
                                                                                                                                                                                                                                                                                                                                                                                                                                    A; Gene:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A; Status: preliminary; nucleic acid sequence not shown; translation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Nature 392,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             R;Deckert, G.; Warren, P.V.; Gaasterland, T.; Young, W.G.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ΩV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Дb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ş
                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                               Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                   Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         μ5
                                                                                                                                                                                                                                                                                                                                                                            госат
                                                                                                                                                                                                                                                                                                                                                                                                                                aq_1336
                                        237
                                                                          238
                                                                                                                                                 180
                                                                                                                                                                                  138
   283
                                                                                                                                                                                                                      120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         186
                                                                                                                                                                                                                                                       86
                                                                                                                                                                                                                                                                                         67
                                                                                                                                                                                                                                                                                                                            30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               353-358, 1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               84
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 89
                                                                                                                                                                                                                                                                                                                                                                            Similarity
                                                                                                      FPWGGKLTGESIKFFSPLVMWTRFSSSKE-KHKALFSAFLEYYQAWLEMTIQVREEMEPS 236
                                                                                                                                         TPFSVLPLDLRTPLGDLKVDIERVEELQKMFDYDLSHDVLAYKNEHSIEFQTIFLKY--L
                                                                                                                                                                                                                                                  KTELQMLAFKSSKIRLLRSMAIENETMQVFD-----FAGFMEPEYDTPIF--CANFFTS
                                                                                                                                                                                                                                                                                   EINQVINFLDENYLL-----YNERFLNKLKEEREKILKKGYREPSHAGQAYPE-NPQEL
                                                                                                                                                                                                                                                                                                                      KINFTLRRKKRFLLRVSAVSYKEFAESALEETRKRIV----LEPSHLQEKYSSMTGLDG
HVGRKFGDPHSY----DPSPRDREYINLLAELKNEE---
                                 HVRANCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLRDFLFNGVDELGTKTFID
                                                                                                                                                                              TNVNIVVLDL-NPLHQLT--
                                                                                                                                                                                                                KNFIEETVNKNSEKFKARGILVPHMDLRVASGVYGSVYSAIKENEYDTVVLLGVSHYFHE 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LQMLAFK-SSKIRLLRSM-----AIENETMQVFDFAGFMEPEYDTPIFCANFFTS---- 137
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ----PGEDGEV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               YFPEYQTEDGTV 305
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       VAIEGE-----ISNIEAKELKSGKTLVSFDLYDGSSSMTCKSFLK 282
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ANCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKEL--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SSAPK --APKETTYKREDTKEETKGKKDPRLILGRNAKFKENVIKIT-----DITPDEGR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GESIKFFSPLVMWTRFSSSKEKHKA-----LFSAFLEYYQAWLEMTIQVREEMEPSHVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     KHLQDAIKTLYGTSYNINFVDDITSEELMLQQEARDQ---EMLAISKQIKEAIGSGGISN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         IKDIIFSMSDKHPVLKSVINNSECKVENNTIN-FNF-----KIAAAEFFKSMKYD
                                                                                                                                                                                                                                                                                                                                                             Conservative
                                                                      ----EVKVIPAIVSYGDTKSLKEIAHK--ITKVLEDSQNPL----IISSYDFS
                                                                                                                                                                                                                                                                                                                                                                           5.4%;
22.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        -TNVNIVVLDLNPLHQLTDQTDYQDKYYNKIMSIYHKYAETFPWGGKLT 185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           289
                                                                                                                                                                                                                                                                                                                                                            47;
                                                                                                                                                                                                                                                                                                                                                      Score 93.5; DB 2;
Pred. No. 6.3;
47; Mismatches 117;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PIDN: AAC07322.1;
                                                                                                                                                                             -DQTDYQDKYYNKIMSIYHKYAET 177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               #text_change 05-Nov-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              -- LRDF-LFNGVDELGTKTFID
-- AFNLLQSDNNRTRID
                                                                                                                                                                                                                                                                                                                                                                                         Length 374;
                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Lenox,
                                                                                                                                                                                                                                                                                                                                                        67;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PID:g2983762; GB:AE00
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Aquifex aeolicus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A.L.; Graham,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   not shown
                                                                                                                                                                                                                                                                                                                                                        Gaps
                                 293
329
                                                                                                                                           237
                                                                                                                                                                                                                                                  137
                                                                                                                                                                                                                                                                                   119
                                                                                                                                                                                                                                                                                                                      85
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             D.E.;
```

```
Result
No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Minimum DB
Maximum DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    OM protein -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Post-processing: Minimum Match 0%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            on:
    Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ..
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             210
    210.5
9 5.7
15.8
9 5.7
9 9.3
9 9.5
9 9.5
9 9.5
9 9.5
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9 9.7
9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           seq length:
seq length:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query
Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   BLOSUM62
Gapop 10.0 ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             June 24, 2003, 17:19:10 ; Search time 21 Seconds (without alignments) 649.796 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            112892 seqs, 41476328 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1 MALSMEFGFSIGSCFKAPNP.....SIIGKSYETRPWDLTGQFIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-09-870-406A-33
1724
    SwissProt_40:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GenCore version 5.1.6
Copyright (c) 1993 - 2003 Compugen Ltd.
    Length DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0
20000000000
  Gapext 0.5
              CISY_HUMAN
SBCC_LACEL
FERL_CAEEL
YG4B_YEAST
DPO3_MYCGE
APB_CHICK
AMY_BACST
DPO3_YEAST
ODD1_RICRP
RRP5_HUMAN
RST1_BUCAI
EST1_RAT
PRIM_MYCPU
POOL_HAEIN
PKNL_CHAEIN
PKNL_CHAEIN
PKNL_CHAEIN
PKNL_CHAEIN
PKNL_CHAEIN
FKNL_SB_BORBU
ESTA_HUMAN
TR13_YEAST
CISY_DIG
GINA_YEAST
CISY_BUCAP
BOCH_NEUIN
STR4_NEUIN
STRS_BUCAP
DPOM_NEUIN
STRS_BUCAP
DPOM_NEUIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     YCP3_SYNPY
YCP2_SYNPY
MFD_BORBU
IPA4_SHIFL
GLG1_YEAST
YD36_AQUAE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ĥ
  OSH2_YEAST
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                P18009 shigella fl
P36143 saccharomyc
O67355 aquifex aeo
O75390 homo sapien
P06279
Q9zdy3
Q14690
P157485
P157485
P157485
P157316
P57316
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Q9cfz0
Q17388
P46951
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Q02190 synechococc
Q02189 synechococc
Q051568 borrelia bu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Description
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ) synechococc
3 borrelia bu
9 shigella fl
                                                                                               a mycoplasma
haemophilus
chlamydia p
homo sapien
buchnera ap
mycobacteri
borrelia bu
homo sapien
boarcharomyc
saccharomyc
sus scrofa
                                                                                                                                                                                                                                                                                                     saccharomyc
rickettsia
homo sapien
buchnera ap
rattus norv
                                                                                                                                                                                                                                                                                                                                                                                                         1 saccharomyc
7 mycoplasma
2 gallus gall
9 bacillus st
                                                           saccharomyc
b gramicidi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            caenorhabdi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 lactococcus
```

45	44	43	42	41	40	39	38	37	36	35	34
81.5	81.5	81.5	81.5	81.5	81.5	82	82	82	82	82	82.5
4.7	4.7	4.7	4.7	4.7	4.7	4.8	4.8	4.8	4.8	4.8	4.8
932	491	430	370	207	203	1835	738	565	558	291	506
μ	1	-	۲	۲	_	_	μ	_	_	<u>_</u>	1
SSA1_PASHA	C2F2_MOUSE	SYD_ARCFU	OTC_ASPNG	A1AH_MUSCR	YPT1_NEUCR	DUR1_YEAST	ECT2_MOUSE	HUTU_PSESX	CX1B_PARDE	ERA_CAMJE	SYK_XYLFA
P31631 pasteurella		029342 archaeoglob						_	P98002 paracoccus	Q9phl1 campylobact	Ç,

## ALIGNMENTS

•	Db	뭣	Оv ма	Ď	SQ	K V	DR :	DR CR	3 0	88	8	3 8	38	င္ပ	38	3 E	RT	Ŗ Ŗ	RT	R A	R P	RN	라:	9 2	RI	RA	RX 7	R R R	0x	8 8	DE DE	DT	3 5	AC ID	YCP3_SYN
	88 ELQMLAFKSSKIRLLRSMAIE-NETMQVFDFAGEMEPEYDTPIFCANFFTSTNVNIVVLD 146	:    : :           :: : :          :           :: : :	HEST LOCAL SIMILARILY 24.3%; Pred. NO. 8./e-10; MATCHES 63; Conservative 55; Mismatches 126; Indels 15; Gaps 8;  34 TLRRRKKRFLLRVSAVGYKEFAESALEETRKRTVLEPSHLOEKYSSMTGLDGKT 87	12.2%;		thetical protein	S31059:	PIR; B46448; B46448.		or send an email to license@isb-sib.ch).	a license agreement (See http://w	modified and this statement is not removed. Heade by and for commercial modified and this statement is not removed.	European Bioinformatics Institute. There are no restrictions on	between the Swiss Institute of Bioinformatics and the EMBL outstation -	This SWISS-PROT entry is copyright. It is produced through a collaboration	Biol. Chem. 268:1226-1241(1993).		the genome of marine	of a p	Wilbanks S.M. Glazer A.N.:	SEQUENCE FROM N.A.		Plant Mol. Biol. 21:225-237(1993).	and comparison of process consolidate interactions in phycocyanius differing in bilin composition ".	of marine Syne	de Lorimier R., Wilbanks S.M., Glazer A.N.;	MEDLINE=93144698; PubMed=8425055;			Synechococcus sp. (strain whoozo).  Bacteria; Cyanobacteria; Chroococcales; Synechococcus.	kDa protein in cpeB	27, Last annotation update)	01-JUL-1993 (Rel. 26, Created)	YCP3_SYNPY STANDARD; PRT; 257 AA. 002190;	_SYNPY

```
RESULT 2
YCP2_SYMPY
YCP2_S
AC 002189
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
DT 01-JUL
   MFD_BORBU
                                                                                                                           QΥ
                                                                                                                                                                       멍
                                                                                                                                                                                                         ρ
                                                                                                                                                                                                                                                   Ъ
                                                                                                                                                                                                                                                                                 δÃ
                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                              Q
                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                       RESULT 3
                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                        δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        . ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  QY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
Best Local
 MFD_BORBU
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     YCP2_SYNPY STANDARD; PRT; 236 AA. 002189; 01-JUL-1993 (Rel. 26, Created) 01-JUL-1993 (Rel. 26, Last sequence update) 01-JUL-1993 (Rel. 26, Last annotation update) Hypothetical 27.2 kDa protein in cpeB 3'region Synechococcus sp. (strain WH8020).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   de Lorimier R., Wilbanks S.M., Glazer A.N.;
"Genes of the R-phycocyanin II locus of marine Synechococcus spp.,
and comparison of protein-chromophore interactions in phycocyanins
differing in bilin composition.";
Plant Mol. Biol. 21:225-237(1993).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Hypothetical SEQUENCE 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                EMBL; M95288; AAA27343.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE FROM N.A. MEDLINE=93144698; PubMed=8425055;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Bacteria; Cyanobacteria; Chroococcales; Synechococcus. NCBI_TaxID=32052;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SWISS-PROT entry is copyright. It is produced through a collaboration ween the Swiss Institute of Bioinformatics and the EMBL outstation - European Bioinformatics Institute. There are no restrictions on its
                                                                                                 224
                                                                                                                                     275
                                                                                                                                                                         167
                                                                                                                                                                                                                                                                                         164
                                                                                                                                                                                                                                                                                                                                                                106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  S31058;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 121
                                                                                                                                                                                                                                                                                                                               59
                                                                                                                                                                                                                                                                                                                                                                                                                                          71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                263
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          207
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  60;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Similarity
                                                                                               LHEFLF
                                                                                                                                   LRDFLF
                                                                                                                                                                                                     FLEYYQAWLEMTIQVREEMEPSHVRANCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKEL
                                                                                                                                                                                                                                                                               YNKIMSIYHKYAETFPWGGKLTG-ESIKFFSP---LVMWTRFSSSKEKHKAL----FSA
                                                                                                                                                                                                                                                                                                                   A---GDSLQVFNSVAYPDYNYDHPLMGVDLLWFGARQKLVAVLDFQPLVQ----DKDYLDRY
                                                                                                                                                                                                                                                                                                                                                      AIENETMOVEDFAGEMEPEYDTPIFCAN--FFTSTNVNIVVLDLNPLHQLTDQTDYQDKY
                                                                                                                                                                                                                                                                                                                                                                                              SFLNELHSDITKRGGSPLPLPEGLE-----ECRSSKSSSVIQSWLWDVPGFRRWRVTRLD
                                                                                                                                                                                                                                                                                                                                                                                                                                        SHLQEKYSSMT-----
                                                                                                                                                                   FLKAYWDLHDNAKSIPSTIPPEEVK---NLQDKYDIYSAERDPAHGLFTSHFGKDWSNRF
                                                                                                                                                                                                                                                   FSGLKELNQRFPD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TRFHGSEWTEAYIHTVLFD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                KRLVGEAKAKELLRDFLFN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GDELIQSIVRPAFNDYLDLYLELAASA-ERVTDERSEVLLQGQRKYTDYRAEKDPARGML
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                KHKALFS----AFLEYYQAWLEMTIQVREEMEPSHVRANCEAQHKYLTWRAQKDPGHGLL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        il protein; Phycobilisome.
236 AA; 27244 MW; 27CFCEBF17B50D8D CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              S31058
 STANDARD;
                                                                                                                                   280
                                                                                               229
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                9.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              41;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Score 158; DE Pred. No. 1.2e
                                                                                                                                                                                                                                           -LNGEETMRSFDPNQYFSSWLLFCRGGAEQADLSLPKAFSA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          256
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                281
PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                    -GLDGKTELQMLAFKSSKI-----
1125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DB 1;
.2e-05;
A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ; 68
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 236;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (ORF236).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          56;
                                                                                                                                                                                                                                                                                                                                                                                                                                    RLLRSM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                       113
                                                                                                                                                                 223
                                                                                                                                                                                                                                           166
                                                                                                                                                                                                                                                                                                                                                        163
                                                                                                                                                                                                                                                                                                                                                                                              58
                                                                                                                                                                                                       274
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                237
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    262
         Ş
                                               뫄
                                                                                 Ş
                                                                                                                         В
                                                                                                                                                                                                                                                                             Ωy
                                                                                                                                                                                                     Matches
```

```
Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                             InterPro; IPR004576; Mfd.
InterPro; IPR005118; TRCF.
Pfam; PF00270; DEAD; 1.
Pfam; PF00271; helicase_C;
Pfam; PF03461; TRCF; 1.
SMART; SM00487; DEXDC; 1.
SMART; SM00490; HELICC; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          O51568;
15-DEC-1998 (Rel. 3
15-DEC-1998 (Rel. 3
16-OCT-2001 (Rel. 4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            modified and this statement is not removed. entitles requires a license agreement (See or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         "Genomic sequence of a Lyme disease spirochaete, Borrelia burgdorferi.";
Nature 390.580-586(1997).
Nature 390.580-586(1997).
TEMPLATE STRAND BLOCKS THE RNA POLYMERASE COMPLEX (RNAP). THE TRENDLATE STRAND BLOCKS THE RNA POLYMERASE COMPLEX (RNAP). THE RNAP COMPLEX IS SPECIFICALLY RECOGNIZED BY TRCF WHICH RELEASES RNAP AND THE TRUNCATED TRANSCRIPT; THE TCRF MAY REPLACE RNAP AT THE LESION SITE AND THEN RECRUIT THE UVRA/B/C REPAIR SYSTEM (BY SIMILARITY).

-!- SIMILARITY: IN THE N-TERMINAL SECTION; BELONGS TO THE UVRB FAMILY FAMILY BEFC STREAMINY BECTORE STREAMINY BECTORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STRAIN-ATCC 35210 / B31;

MEDLINE-98065943; PubMed-9403685;

Fraser C.M., Casjens S., Huang W.M., Sutton G.G., Clayton Lathigra R., White O., Ketchum K.A., Dodson R., Hickey E.K. Dougherty B., Tomb J.-F., Fleischmann R.D., Richardson D., Peterson J., Kerlavage A.R., Quackenbush J., Salzberg S., van Vugt R., Palmer N., Adams M.D., Gocayne J.D., Weidman Utterback T., Watthey L., McDonald L., Artiach P., Bowman Garland S., Fujii C., Cotton M.D., Horst K., Roberts K., H. Smith H.O., Venter J.C.;
                                                                                                                                                                                                                                                                                                                   SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                             Helicase;
                                                                                                                                                                                                                                                                                                                                                                                              TIGRFAMs;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       the European Bioinformatics Institute. The European Bioinformatics Institutions as long
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Borrelia burgdorferi (Lyme
Bacteria; Spirochaetales; s
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Transcription-repair MFD OR BB0623.
                                                                                                                                                                                                                                                                                                                                                       BIND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FAMILY. RECG SUBFAMILY.
                           166
                                                                    189
                                                                                                            123
                                                                                                                                                   133
                                                                                                                                                                                         64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        вв0623;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AE001163; AAC66973.1;
                                                                                                                                                                                                                                                   Similarity
KIMSI-YHKYAETFPWGGKLTGESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLE
                                                             --EQNPIRIALNEDKIE---EIKKENPLTQLKHDNEILEFQILPKKEIIWDDKTINTLKT
                                                                                                      PEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTD
                                                                                                                                                                                     KRIVLEPSHLQEKYSSMTGLDGKTELQMLAF-KSSKIRLLRSMAIENETMQVFDFAGFME
                                                                                                                                                                                                                                                                                                                              TIGRO0580; mfd; 1.

TIGRO0580; mfd; 1.

DNA repair; ATP-binding; DNA-binding; Complete 610 617 ATP (POTENTIAL).

711 714 DEEQ BOX.
                                                                                                                                               KNTLLKNIYKIEKNTNINTADIEKTLITLGYEKTLRVTIPGEFTVKGEIIDIYPFG----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FROM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            IPR001650;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   IPR001410;
                                                                                                                                                                                                                                                                                                                 1125 AA;
                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             helicase_C;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             37,
37,
                                                                                                                                                                                                                                                   5.5%;
22.0%;
                                                                                                                                                                                                                                                                                                                 130729 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TRCF.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Helicase_C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  coupling
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Created)
Last sequence update)
Last annotation update)
coupling factor (TRCF).
                                                                                                                                                                                                                                43;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Spirochaetaceae; Borrelia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            disease spirochete)
                                                                                                                                                                                                                                               Score
Pred.
                                                                                                                                                                                                                                                                                                  DEEQ BOX.
WW; 116FBF8DE9024539 CRC64;
                                                                                                                                                                                                                                Mismatches
                                                                                                                                                                                                                                                   95.5;
No. 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      There
                                                                                                                                                                                                                                                                      DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     as its content
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                              107;
                                                                                                                                                                                                                                                                  ŗ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Usage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             are no
                                                                                                                                                                                                                                                                  Length 1125;
                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TO THE UVRB FAMILY.
TO THE HELICASE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        K., Hatch
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           restrictions
                                                                                                                                                                                                                                                                                                                                                                        proteome
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        . K.,
                                                                                                        YQDKYYN----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ۲. ن
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 R.A.,
                                                                                                                                                                                                                           45;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          is
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gwinn M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            В.,
                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    commercial
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          no
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           9
                       224
                                                             243
                                                                                                      165
                                                                                                                                            188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     way
```

밁

244

KIKSVEYKKILEELDF - - KKETKTEEMFYPLVANTYLGDEIEKHTPIVNFEINNFEKEIE

301

171 60

378 241

```
RESULT
IPA4_SH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
   Query Match
Best Local s
Matches 85
                                                                          REPEAT
REPEAT
SEQUENCE
                                                                                                                           REPEAT
REPEAT
REPEAT
REPEAT
                                                                                                                                                                                                                                                                                                                                                                                                                                This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation - the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           65.4 kDa antigen.
IPAH 4.5.
Shigella flexneri.
Plasmid 210 kb invasion
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               "Sequence and molecular characterization of a multicopy plasmid antigen gene, ipaH, of Shigella flexneri."; J. Bacteriol. 172:1905-1915(1990).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Mo1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Venkatesan M.M., Buysse J.M., Hartman A.B.; "Sequence variation in two ipaH genes of Shi homology to the LRG-like family of proteins. Mol. Microbiol. 5:2435-2445(1991).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          _SHIFL
                                                                                                                                                                                                                                                                                         InterPro: IPR001611; LRR.
InterPro: IPR003592; LRR_out.
Pfam; PF00560; LRR; 4.
SMART; SM00370; LRR; 8.
                                                                                                                                                                                                                                                                                                                                                            EMBL; M76445; AAA26528.1;
EMBL; M32063; AAA26527.1;
EAR; B35149; B35149.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      STRAIN=M90T / Serotype 5;
MEDLINE=90202708; PubMed=1690703;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE OF 1-208 FROM N.A. STRAIN-M90T / Serotype 5;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE FROM N.A.
STRAIN-M90T / Serotype 5;
MEDLINE-92167809; PubMed-1791758;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE FROM
STRAIN-M90T /
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          01-NOV-1990 (Rel.
01-NOV-1997 (Rel.
01-NOV-1997 (Rel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    01-NOV-1990
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        P18009;
                                                                                                                                                                                                                      REPEAT
                                                                                                                                                                                                                                                           DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PA4_SHIFL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   285
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        302
     l Similarity
85; Conser
                                                                                                                                                                                                                                                                              Plasmid;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SLKSKETIEF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ELGTKTFIDY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ---KIHQEYEKLYKEAE-EAGKNII
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MTIQVREEMEPSHVRANCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLRDFLFNGVD
                                                                        74
114
135
155
175
175
195
215
217
     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             16, Created)
35, Last sequence update)
35, Last annotation update)
                                                                                                          87
107
127
148
168
188
208
                                                                        228
65408
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   356
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   294
                                                                                                                                                                                                                                                                          rulence;
                  5.5%;
                                                                          ¥
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           gamma subdivision;
     41;
 Score 95; DB:
Pred. No. 3.9;
41; Mismatches
                                                                                                                                                                               Repeat; Multigene family.

8 X 14 AA APPROXIMATE TANDEM REPEATS
L-X(2)-L-P-X-L-P-X(2)-L-X(2)-L.

1.
2.
3.
                                                                                           œ
                                                                                                                   7654
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PRT;
                                                                        01E083B3446C97B2 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       574
              DB
3.9;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Shigella
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       B
                                   ۲.
   145;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Enterobacteriaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      -KRILLNYKTFNLKSDVLFSKIK
                                   Length 574;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 flexneri 5
   Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   invasion
   126;
 Gaps
                                                                                                                                                                                                                                                          얽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      346
   18;
GLG1_YEAST
ID GLG1_Y
AC P36143
AC P36143
DT 01-NUN
DT 01-NUN
DT 01-SUL
DE G1yco
GOS Saccha
OC Saccha
OC Saccha
OC SACCHA
RN [1]
RP SEQUEN
RN CHEIT
RY REQUEN
RY RACHOLIN
RY CHEIT
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUEN
RY SEQUE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     δõ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          δõ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2
                                                EMBL; U25546; F
                                                                                                                                                                                                                                                                            STRAIN-SZBUC; Planta R.J.; van Vliet-Reedijk J.C., Planta R.J.; submitted (MAR-1994) to the EMBL/GenBank/DDBJ databases.
-!- FUNCTION: SELF-GLUCOSYLATING INITIATOR OF GLYCOGEN SYNTHESIS.
                                                                                                      use by non-profit institutions as long modified and this statement is not removed. entitles requires a license agreement (See or send an email to license@isb-sib.ch).
                                                                                                                                                                               the European Bioinformatics Institute.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Saccharomyces cerevisiae (Baker's yeast).
Eukaryota; Fungi; Ascomycota; Saccharomycotina; Saccharomycetes;
Saccharomycetales; Saccharomycetaceae; Saccharomyces.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GLG1 OR YKR058W
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Glycogen synthesis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  01-JUN-1994 (Rel.
01-NOV-1995 (Rel.
15-JUL-1999 (Rel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GLG1_YEAST
                                                                                                                                                                                                                                                                                                                                                                                                             Cheng C., Mu J., Farkas I., Huang D., Goebl M.G., Roach P.J.; Requirement of the self-glucosylating initiator proteins Glg1p Glg2p for glycogen accumulation in Saccharomyces cerevisiae."; Mol. Cell. Biol. 15:6632-6640(1995).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE FROM N.A. MEDLINE=96069371; PubMed=8524228;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          P36143;
                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE OF 139-480 FROM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NCBI_TaxID=4932;
                                                                                                                                                                                                                                                  SYNTHASE.
SIMILARITY: BELONGS TO THE GLYCOGENIN FAMILY.
                                 S38134; S38134.
                                                                                                                                                                                                SWISS-PROT entry is copyright. It is produced through sen the Swiss Institute of Bioinformatics and the EM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             320
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               203
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       127
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LHFVDEIEVYLAFQTMLAEKLQLSTAVKEMRFYGVSG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   QDKYYNKIMSIYHKYAETFPWGGKLTGESIKFFSPLV----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LSMEFGFSIGSCFKAPNPPVL--ISASPNKINFTLRRKKRFLLRVSAVSYKEFAESALE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CE-DRVALTWNNLRKTLLVHQASEGLFDNDTGALLSLGREMFRLEILEDI---ARDKVRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CEAQHKYLTWRAQK----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           -EHEEHANTFSAFLDRLSDTVSARNTSGFREQVAAWLEKLSASAELRQQSFAVAADATES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SSKEKHKALFSAFL-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  HGP-----QIYFSMSD------GQQNTLHRPLADAVTAWFPENKQSDVSQIWHAF-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DFAGFMEPEYDTPIFCANFFTSTNVNIVVLDL-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GNRLTVLPELPHRLQELFVSGNRLQELPEFPQSLKYLKVGENQLRRLSRLPQELLALDVS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ETRKRIVLE-PSHLQEKYSSMTGLDGKTE----LQMLAFKSSKIRLLRSMAIENETMQVF
                                                    AAA91646.1;
CAA82136.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  . 29, Created)
. 32, Last sequence upo
. 38, Last annotation of initiator protein G
GT_8
                                                                                                                                                                                                                                                                                                                                                                             N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NLLTSLPENIITLPICTNVNISGNPLSTRVLQSLQRLTSSPDY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          -DPGHGLLKRLVGEAKAKELLRDFLFNGVDELGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     n update)
GLG1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           618
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EYYQAWLEMTIQVREEMEPSHVRA----N
                                                                                                                                                          There are no rest
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ₹
                                                                                                                         http://www.isb-sib.
                                                                                                                                          Usage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     471
                                                                                                                                                                                              and the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              - - - - - GN
                                                                                                                                                                           restrictions
                                                                                                                                             and for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ---LHQLTDQTDY
                                                                                                                                                                                                  EMBL
                                                                                                                                                                                                                  ø
                                                                                                                                                                                                  collaboration
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    --MWTRFS
                                                                                                                                                                                                                                                                                                          ACT
                                                                                                                                                              no
                                                                                                                                                                             9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ė
```

δÃ

```
В
                           Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT
YD36_A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     QY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                멂
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δõ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ъ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SQ
                                                      Query Match
Best Local S
Matches 66
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Matches
                                                                                                                                                                                            between the Swiss Institute of Bioinformatiche European Bioinformatics Institute. These use by non-profit institutions as long modified and this statement is not removed. entities requires a license agreement (See lor send an email to license@isb-sib.ch).
                                                                                                                                              InterPro; IPR002737; DUF5
Pfam; PF01875; UPF0103; 1
                                                                                                                                                                                                                                                             This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation -
                                                                                                        Hypothetical protein; SEQUENCE 374 AA; 4:
                                                                                                                                ProDom; PD006364; DUF52; 1.
                                                                                                                                                                      EMBL; AE000735; AAC07322.1; -.
                                                                                                                                                                                                                                                                                                                                   Deckert G., Warren P.V., Gaasterland T., Young W.G., Lenox A.L., Graham D.E., Overbeek R., Snead M.A., Keller M., Aujay M., Huber Feldman R.A., Short J.M., Olson G.J., Swanson R.V.; "The complete genome of the hyperthermophilic bacterium Aquifex aeolicus."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Pfam; PF01501; Glyco_transf_8;
Glycogen biosynthesis.
SEQUENCE 618 AA; 69912 MW;
                                                                                                                                                                                                                                                                                                   Nature 392:353-358(1998)
                                                                                                                                                                                                                                                                                                                                 aeolicus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       30-MAY-2000
30-MAY-2000
                                                                                                                                                                                                                                                                                                                                                                                           MEDLINE=98196666; PubMed=9537320;
                                                                                                                                                                                                                                                                                                                                                                                                           STRAIN-VF5
                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                              NCBI_TaxID=63363;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Bacteria; Aquificae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Aquifex aeolicus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Hypothetical
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            16-OCT-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             YD36_AQUAE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AQUAE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         134
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   119
 67 EINQVINFLDENYLL----
                            30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            104
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            53
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     59
                                                       66;
                                                                  Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Similarity
                        KINFTLRRRKKRFLLRVSAVSYKEFAESALEETRKRIV----LEPSHLQEKYSSMTGLDG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MNYFKPSIKLIHFIG---KHKPWSLWSQKNFIKNEYHDQWNEVYEEFKEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FFTSTNVNIVVLDLNPLHQLTDQ---TD--YQDKYYNKIMSIYHKYAETFPWGGKLTGES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        -----SMAIENETMQVFDF---------AGFME--PEYDTPIFCAN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ELAKNILQSIYTKIVLVEPLNCQEESIQKNSENLALLERPELSFALIKARLWELTQFEQV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EFAESALEETRKRIVL-EPSHLQE----KYSSMTGLDGKTELQMLAFKSSKIRLLR----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  IKFFSPLVMWTRFSSSKEKHK--ALFSA--FL--EYYQAWLEMTIQVREE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            YIFE-NTSIDGSDQGILNQFFNQNCCTDELVKDSFSREWVQLSFTYNVTIPNLGYQSSPA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LYLDSDTLPLNKEFLKLFDIMSKQTTSQVGAIADIGWPDMFNSGVMMLIPDADTASVLQN
                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (Rel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (Rel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           protein AQ_1336.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         40,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   39,
                                                                                                        1; Complete 43275 MW;
                                                                 5.4%;
22.2%;
                                                                                                                                                           DUF52.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 5.5%;
23.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Aquificae (class); Aquificales; Aquificaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Last sequence update)
Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Created)
                                                                                                                                                                                                                                                                                       TO THE UPF0103 FAMILY. AQ_1336 SUBFAMILY
                                                    47;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      37;
                                                  Pred. No. 3; 7; Mismatches
                                                               Score 93.5;
Pred. No. 3;
-YNERFLNKLKEEREKILKKGYREPSHAGQAYPE-NPQEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score 95;
Pred. No.
                                                                                                  proteome.
DF4966E42F756E54 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ۲
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       E5422F6ACEDD9CDA CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             374
                                                                                                                                                                                                           (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                There are no restrictions ng as its content is in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DB 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             B
                                                                          DB 1;
                                                   117;
                                                                                                                                                                                                                       Usage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   85;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 618
                                                                           Length
                                                   Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                       bу
                                                                           374;
                                                                                                                                                                                                                        and
                                                  67;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   54;
                                                                                                                                                                                                                          for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          284
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   232
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                     no
                                                                                                                                                                                                                                                 CI
                           85
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             237
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        133
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          103
```

5

Conservative

38;

104;

Indels

96;

Gaps

16;

```
RESULT 7
CISY_HUMAN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ъ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Q
  Query Match
Best Local S
Matches 67
                                                                                      CHAIN
ACT_SITE
                                                                                                                                                                                                                            EMBL;
                                                                                                                                        Pfam; PF00285; citrate_synt; l
PRINTS; PR00143; CITRTSNTHASE.
PROSITE; PS00480; CITRATE_SYNT
                                                                                                                                                                                          MIM;
                                                                                                                                                                                                                                                  use by non-profit institutions as long modified and this statement is not removed. entitles requires a locense agreement (See or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CISY_HUMAN
075390;
                                                   SEQUENCE
                                                                                                                TRANSIT
                                                                                                                                                                                                    Genew;
                                                                                                                                                                                                                                                                                               This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation between Bioinformatics Institute. There are no restrictions on its
                                                                                                                                                                                                                                                                                                                                                                         -i- PATHWAY: Tricarboxylic acid cycle.
-i- SUBUNIT: HOMODIMER (BY SIMILARITY)
-i- SUBCELLULAR LOCATION: Mitochondrial
-i- MISCELLANEOUS: CITRATE SYNTHASE IS
                                                                                                                                                                                                                                                                                                                                                                                                                                                   MEDLINE-99026970; PubMed-9809442; Goldenthal M.J., Marin-Garcia J., Anant "Cloning and molecular analysis of the Genome 41:733-738(1998).
                                                                                                                             Lyase;
                                                                                                                                                                                                                                                                                                                                                  - I - SIMILARITY: BELONGS TO THE CITRATE SYNTHASE FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                      -1- CATALYTIC ACTIVITY: Citrate + CoA =
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TISSUE-Heart;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Eukaryota; Metazoa; Chordata;
Mammalia; Eutheria; Primates;
                                                                                                                                                                             InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NCBI_TaxID=9606;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Homo sapiens (Human).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 15-JUL-1999
15-JUN-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         15-JUL-1999
                                                                                                                                                                                                                                                                                                                                                                                                                           oxaloacetate.
                                                                                                                                                                                                                                                                                                                                                             CAPABLE OF OXIDATIVE METABOLISM
                                                                                                                                                                                          118950;
                                                                                                                                                                                                                   P00889;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               283
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      237
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             120
                                                                                                                                                                                                                          AF047042; AAC25560
                                                                                                                            Tricarboxylic
   . Similarity
67; Conser
                                                                                                                                                                                                   HGNC:2422; CS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            HVGRKFGDPHSY-----DPSPRDREYINLLAELKNEE-----AFNLLQSDNNRTRID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 HVRANCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLRDFLFNGVDELGTKTFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FPWGGKLTGESIKFFSPLVMWTRFSSSKE-KHKALFSAFLEYYQAWLEMTIQVREEMEPS 236
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TPFSVLPLDLRTPLGDLKVDIERVEELQKMFDYDLSHDVLAYKNEHSIEFQTIFLKY--L 237
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TNVNIVVLDL-NPLHQLT--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            KNFIEETVNKNSEKFKARGILVPHMDLRVASGVYGSVYSAIKENEYDTVVLLGVSHYFHE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 KTELQMLAFKSSKIRLLRSMAIENETMQVFD----FAGFMEPEYDTPIF--CANFFTS
                                                                                                                                                                          IPR002020; Citrate_synt.
                                                               28
301
347
402
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (Rel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (Rel.
                                                                                                                                                                                                                2CTS.
                                                   AA;
                                        27
466
301
347
402
51706 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               38,
38,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     mitochondrial
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            EVKVIPAIVSYGDTKSLKEIAHK--ITKVLEDSQNPL----IISSVDFS 282
           5.3%;
                                                                                                                             acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Last sequence update)
Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Created)
                                                   ¥.
                                                                                                                           cycle; Mitochondrion;
                                                                                                                                         SYNTHASE; 1.
                                                            CITRATE SYNTHASE.
BY SIMILARITY.
BY SIMILARITY.
BY SIMILARITY.
Pred. No. 5.2;
3; Mismatches
                         Score
                                                                                                                MITOCHONDRION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Craniata; Vertebrata; Euteleostomi; Catarrhini; Hominidae; Homo.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRT;
                                                  878841484BD7CC80 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    precursor
                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ananthakrishnan R.; f the human citrate
            No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  466
                                                                                                                                                                                                                                                               (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                           FOUND
            DB 1;
5.2;
                                                                                                                                                                                                                                                                                   There are no restrictions ng as its content is in
                                                                                                                                                                                                                                                                                                                                                                        matrix.
FOUND IN NEARLY
                                                                                                                                                                                                                                                                                                                                                                                                                                      acetyl-CoA + H(2)0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CEC
                                                                                                                                                                                                                                                                            Usage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   4.1.3.7).
                         Length 466
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DQTDYQDKYYNKIMSIYHKYAET
                                                                                                                           Transit
                                                                                                                                                                                                                                                                                                                                                                                                                                                             synthase gene.";
                                                                                                                                                                                                                                                                                                                                                                          ALL
                                                                                                                                                                                                                                                                            and
                                                                                                                                                                                                                                                                                                                                                                           CELLS
                                                                                                                                                                                                                                                                            for
                                                                                                                                                                                                                                                                                       ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     293
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   177
                                                                                                                                                                                                                                                                                      way
```

```
SBECULT SECULT S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Q.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          δõ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             日
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MEDLINE=21235186; PubMed=11337471;
Bolotin A., Wincker P., Mauger S., Jaillon O., Malarme Weissenbach J., Ehrlich S.D., Sorokin A.;
"The complete genome sequence of the lactic acid bacter lactis ssp. lactis II1403.";
Genome Res. 11:731-753(2001).
-I- FUNCTION: SbcCD cleaves DNA hairming.
                  InterPro; IRR003339; ABC_transportr.

Hydrolase; Nuclease; Exonuclease; Bona re DNA recombination; ATP-binding; Coiled coil; Complete NP_BIND 34 41 ATP (POTENTIAL).

DOMAIN 223 239 COILED COIL (POTENTIAL).

DOMAIN 268 432 COILED COIL (POTENTIAL).

DOMAIN 468 505 COILED COIL (POTENTIAL).

DOMAIN 468 505 COILED COIL (POTENTIAL).

DOMAIN 543 867 COILED COIL (POTENTIAL).
                                                                                                                                                                                                                                                                                                                   the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entitles requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SBCC_LACLA STANDARD: PRT; 1046 AA. 09CFZ0; 05-TUN-2002 (Rel. 41, Created) 15-JUN-2002 (Rel. 41, Last sequence update) 15-JUN-2002 (Rel. 41, Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     This
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LACLA
      SEQUENCE
                                                                                                                                                                                                                                                                EMBL; AE006364; AAK05419.1; -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          between
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Lactococcus lactis (subsp. lactis) (Streptococcus lactis).
Bacteria; Firmicutes; Lactobacillales; Streptococcaceae; Lactococcus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NCBI_TaxID=1360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Nuclease sbcCD subunit C.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FUNCTION: SDCCD cleaves DNA hairpin structures. These structures can inhibit DNA replication and are intermediates in certain DNA recombination reactions. The complex acts as a 3'-5' double strand exonuclease that can open hairpins. It also has a 5' single-strand endonuclease activity (By similarity). SUBUNIT: Heterodimer of sbcC and sbcD (By similarity). SIMILARITY: BELONGS TO THE SMC FAMILY. SBCC SUBFAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                              SWISS-PROT entry is copyright. It is produced through a collaboration the Swiss Institute of Bioinformatics and the EMBL outstation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                OR LL1321.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             277
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      288
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             217
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        95
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DFLFN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SFAAAMNGLA----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      QDKYYNKIMSIY----HKYAETFPWGGKLTGESIKFFSPLVMWTRFSSSKEKHKALFSAFL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RGISRTKYWELIYEDSVDLIAKLPCVAAKIYRNLYWEGSGIGAIDSNLDWSHNFTNMLGY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SKEWAKRAAL-PSHV-----VTMLDNFPTNLHPMSQLSAAVTALNS---ESNFAQAY-A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GFSIPECQKLLPKAKGGEEPLPEGLF - - - -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GFSIGSCFK-----APNPPVLISASPNKINFTLRRKKRFLLRVSAVSYKEFAESA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DYIWN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       EYYQAWLEMTIQVREEMEPSHVRANCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TDHQFTELMRLYLTIHSDHE----GGNVSAHT----SHLV--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AGFMEPEY
   468
543
1046
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    334
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             281
   AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            -----DTPIFCAN----
   120199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      -GPLHGLANOEV----LVWLTQ---
   ₹,
   8F70D00AC28F8691 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FFTSTNVNIVVLDLNPLHQLTDQTDY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         acid bacterium
                                                                                                                                                                                                   DNA replication;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ---LQKEVGKDVSDEKLR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 -WILVTGCIPTEEQVSWL
                                                                                                                                                                     proteome.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                -----GSALSDPYL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ~
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Lactococcus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             276
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      216
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                287
```

```
RESULT 9
FERI_CAEEL
ID FERI_C
ID FERI_C
AC Q17388
AC Q17388
AC Q17388
DT 15-JUN
DT 15-JUN
DT 15-JUN
DT 15-JUN
DT 15-JUN
CAENOR
GN FER-1
GN FER-1
GN FER-1
GN CEBLT
RN SEQUEN
RA ACHARDE
RT "A nem
RL J. Cel
RN [2]
RP SEQUEN
RA KEISHAIN
RA KEISHAIN
RA KEISHAIN
RA KEISHAIN
RA KEISHAIN
RA KEISHAIN
RC -!- FU
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC -!- SI
CC 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δõ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FER1_CAEEL Q17388;
                                                                                                       This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on it use by non-profit institutions as long as its content is in no wall modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                              spermiogenesis.

1. SUBCELLULAR LOCATION: Type II membrane protein (I-1-SUBCELLULAR LOCATION: Type II membrane protein (I-1-TISSUE SPECIFICITY: Exclusively expressed in the -1-SIMILARITY: BELONGS TO THE FERLIN FAMILY.

-1- SIMILARITY: CONTAINS 2 C2 DOMAINS.
                      EMBL; U57652; AAB02243.1; EMBL; Z79755; CAB02109.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE FROM N.A. STRAIN-Bristol N2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE FROM N.A.
MEDLINE-97318766; Pubmed-9175703;
Achanzar W.E., Ward S.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Eukaryota; Metazoa;
Rhabditidae; Pelode:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Caenorhabditis elegans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sperm vesicle fusion FER-1 OR F43G9.6.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Kershaw J.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               "A nematode gene required for sperm J. Cell Sci. 110:1073-1081(1997).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NCBI_TaxID=6239;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              15-JUN-2002 (Rel. 41, Created)
15-JUN-2002 (Rel. 41, Last sequence up
15-JUN-2002 (Rel. 41, Last annotation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        828
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             127
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        553 IDESQKKQTVLLEKNKQLQQLKTELKTSLDLKKIEADEFEKELSILYSEFIADYSQIFPD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        67;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ISASPNKINFTLRRRKKRFLLRVSAVSYKEFAESALEETRKRIVLEPSHLQEKYS----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      WLEMTIQVREEME --- PSHVRANCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLRDF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     VFLQKKLVSAENEVEQ--AKSILSELKKVIKQQDKDASKKSAITKLY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LF-----NGVDELGTKTFIDYFPEYOTEDGTVSDKRSIIGKSY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               YDDDLIQISQKVEQYKADKARLKVEIKNIQQLIQNKKRPNLALI-----EEEKKQTNENY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            --QLSDIKIKISSQTASLNSFESQEATLLERISANKEKIKEKFSEQEAFTTEFQILKEWA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GGKLTGESIKFFS------PLVMWTRFSSSKEKHKALFS---AFLEYYQ-----A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RQIENLNAEITEIGITETSYNLI----RKRNRLMEKADLFEKHLSELMA----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TPIFCANE - - - - - FTSTNVNIVVLDLNPLHQLTDQTDYQDKYYNKIMSIYHKYAETFPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SFDEVSIDESLLNLTKSLELEEVKNDETKVKLADLESKKLELQEKVKDFEYS---NQEFN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    -----SMTGLDGKTELQMLAFKSSKIRL--LRSMAIE-NETMQVFDFAGFMEPEYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Peloderinae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Nematoda;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 5.2%;
19.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Caenorhabditis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     66;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          fer-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score 90.5;
Pred. No. 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Chromadorea;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2034
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         vesicle fusion.";
                                                                                                                                 (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       19;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ₿
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Rhabditida; Rhabditoidea;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        133;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ۲,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 1046;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                                       (By similarity)
he testis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        organelles
in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     872
                                                                                                                                                                                                                                                   a collaboration -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        81;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            772
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                221
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      714
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                669
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        14;
```

```
밁
                                                                                                                                                                                                                                                                                                                                 δÃ
                                                                                                                                                                                                                                                                                                                                                      84
84
84
                                                                                                                                                                                                                                                                                                                                                                                                                  Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                          Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DЬ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         뫄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
Best Local S
Matches 61
                                                                                                                                                                                                  01-NOV-1995 (Rel. 32, 0
01-NOV-1995 (Rel. 32, 1
01-OCT-1996 (Rel. 34, 1
Hypothetical 95.4 kDa p
YGR198W OR G7594.
                                    Saccharomyces cerevisiae chromosome unknown open reading frames.";
Yeast 11:1087-1091(1995).
                                                                                          MEDLINE=96076633; PubMed=7502584;
Guerreiro P., Maia e Silva A., Barreiros T.,
Garcia-Gonzalez M., Garcia-Saez M.I., Rodrig
                                                                                                                                                                                                                                                      YG4B_YEAST
P46951;
               between
                                                                                                                                STRAIN-S288c
                                                                                                                                       SEQUENCE FROM N.A.
                                                                                                                                                           Saccharomycetales;
NCBI_TaxID=4932;
                                                                                                                                                                                        Saccharomyces cerevisiae
                                                                                                                                                                                                                                                                            YEAST
                                                                                                                                                                                Eukaryota; Fungi;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DOMAIN
DOMAIN
DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DOMAIN
DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SMART; SM00239; C2; 4.
PROSITE; PS00499; C2_DOMAIN_1;
PROSITE; PS50004; C2_DOMAIN_2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TRANSMEM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Transmembrane;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Pfam; PF00168; C2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    interPro;
     European
        SWISS-PROT entry is copyright. It is produced through a collaboration een the Swiss Institute of Bioinformatics and the EMBL outstation
                                                                                                                                                                                                                                                                                                                   826
                                                                                                                                                                                                                                                                                                                                       315
                                                                                                                                                                                                                                                                                                                                                                               273
                                                                                                                                                                                                                                                                                                                                                                                                   715
                                                                                                                                                                                                                                                                                                                                                                                                                                         678
                                                                                                                                                                                                                                                                                                                                                           766
                                                                                                                                                                                                                                                                                                                                                                                                                      221
                                                                                                                                                                                                                                                                                                                                                                                                                                                             161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  628
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 61;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   KYLGRINPYSSNALDRHILDYRKEKILKLREHFEKEAFSIDYSDGEVDAKLL-----R
                                                                                                                                                                                                                                                                                                                  ADELKPKDL 834
                                                                                                                                                                                                                                                                                                                                       SYETRPWDL
                                                                                                                                                                                                                                                                                                                                                     KTNEVPLENGWNAVGHWIYMNTRHMFVPKLGQHTVHDKAFEIQKRTEDGTWKHFKYTDCY 825
                                                                                                                                                                                                                                                                                                                                                                                                              AWLEMTIQV---REEMEPSHVR---ANCEAQHK--YLTWRAQKDPGHGLLKRLVGEAKAK
                                                                                                                                                                                                                                                                                                                                                                                                                                                      DKYYNKIMSIYHKYAETFPWGGKLTGESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ML--LKIRSMTLELAEDVQMTIP----PVLIKMMSHGKLIGFAKIPISEIFQSDDE----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LLRSMAIENETMOVEDFAGEMEPEYDTPIFCANFFTSTNVNIVVLDLNPLHOLTDQTDYQ
                                                                                                                                                                                                                                                                                                                                                                               ELLRDFLFNG----
                                                                                                                                                                                                                                                                                                                                                                                              MWFGRTDQLTKWKEHVQPADIRRFMEMYEVQTKGLALKWKDEAD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RFLLRVSAVSYKEFAESALEETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        IPR000008;
0168; C2; 2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1999
2020
46
938
952
1384
   Bioinformatics
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                 STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Repeat; Spermatogenesis
1 1998 CYTOPLASM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ä,
                                                                                                                                                               evisiae (Baker's yeast).
Ascomycota; Saccharomycotina; Sacch
: Saccharomycetaceae; Saccharomyces.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2019
2034
62
943
1063
1483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1868
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          5.2%;
19.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   C
                                                                                                                                                                                                             protein
                                                                                                                                                                                                                    Last sequence update)
                                                                                                                                                                                                                                            Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        235240
                                                                                                                                                                                                                                                                                                                                                                                                                                   AQSGEWCGRTRAINIQW--PTLVDQR--NRKREHVAVLHA----K
  Institute.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               C2 DOMAIN 1.
C2 DOMAIN 2.
CYS-RICH.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Score 90.5;
Pred. No. 4
                                                                                                                                                                                                             in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              THR/SER/LYS-RICH.
POLY-ARG.
                                                                                                                                                                                                                                                                PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 POTENTIAL.
EXTRACELLULAR (POTENTIAL)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CYTOPLASMIC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FALSE_NEG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Mismatches 114;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      402A42532618896B CRC64;
                                                                                                                                                                                                           sNG1-PMT6 intergenic
                                                         fragment of the right arm of VII contains four previously
                                                                                                                                                                                                                                                                                                                                                                         VDELGTKTFIDYFPEYQ--TEDGTVSDKRSIIGK
                                                                                                                                                                                                                                                               817
                                                                                           Rodrigues-Pousada
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           45
  There are
                                                                                                                                                                                                                                                               B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (POTENTIAL).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DB
                                                                                                      Arroyo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ۲.
                                                                                                                                                                           Saccharomycetes;
  no
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length 2034;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                      ٦.,
 restrictions
                                                                                            G
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              75;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
on
                                                                                                                                                                                                                                                                                                                                                                                             765
                                                                                                                                                                                                                                                                                                                                                                                                                272
                                                                                                                                                                                                                                                                                                                                                                                                                                     714
                                                                                                                                                                                                                                                                                                                                                                                                                                                         220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            677
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         100
```

```
RESULT
                                                       δã
                                                                                 Б
                                                                                                      δÃ
                                                                                                                                밁
                                                                                                                                                     Ş
                                                                                                                                                                                ₽
                                                                                                                                                                                                   Qy
                                                                                                                                                                                                                               В
                                                                                                                                                                                                                                                     δÃ
                                                                                                                                                                                                                                                                               닭
                                                                                                                                                                                                                                                                                                     Qy
                                                                                                                                                                                                                                                                                                                               Ъ
                                                                                                                                                                                                                                                                                                                                                     ρ
                                                                                                                                                                                                                                                                                                                                                                                                                                Matches
                                                                                                                                                                                                                                                                                                                                                                                          Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                        SGD; S0003430
Hypothetical
                                                                                                                                                                                                                                                                                                                                                                                         Local
                                   619
                                                                                   568
                                                          306
                                                                                                                                 508
                                                                                                                                                                                448
                                                                                                         250
                                                                                                                                                         209
                                                                                                                                                                                                       174
                                                                                                                                                                                                                                392
                                                                                                                                                                                                                                                      132
                                                                                                                                                                                                                                                                               345
                                                                                                                                                                                                                                                                                                                               285
                                                                                                                                                                                                                                                                                                                                                                                                                                                     S0003430;
                                                                                                                                                                                                                                                                                                                                                                                                                                                  X82775; CAA58017.1;
Z72983; CAA97225.1;
S0003430; YGR198W.
                                                                                                                                                                                                                                                                                                       74
                                                                                                                                                                                                                                                                                                                                                      24
                                                                                                                                                                                                                                                                                                                                                                               l Similarity
73; Conser
                                 GPKYS
                                                          SDKRS 310
                                                                               NDRWQFIHLKLTQLALIEEIFGTLEALETLPE----VFEL---
                                                                                            ETAIKTLESLILSKNPNYKAWHLLALCRSVQEDKEMSYKIVCSVLEAMNESLQNNTLLL
                                                                                                                                                  ----KALFSAFL----EYYQAW--LEMTIQVREEMEPSH--VRANCEAQHKYL-----
                                                                                                                                                                         YQLDFLVSNNLTSYLCNAMMLSTKEKDNADVEEQEEGEEEKALRELQFKYSYTLAQQRHI
                                                                                                                                                                                                      YAETFPWGGKLT
                                                                                                                                                                                                                         STFATSLNSFYKEYNL-PLMSQSESLDWLE---NSTRCVYPGNISKVLTNAWSTLYEIRK
                                                                                                                                                                                                                                               ANFFTSTNVNIVVLDLNPLHQLTDQTDYQDKYYNKIMSIY------HK
                                                                                                                                                                                                                                                                                                 --QEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIENETMQVFDFAGFMEPEYDTPIFC
                                                                                                                                                                                                                                                                            KYNDKYYQ----LHDNSHRDIISFIDAYSFILQNSSKTDSIENVFD-----
                                                                                                                                                                                                                                                                                                                         IKVNPSWYNFIISSMEKTFQSIEVSKTAMFLFQNLSDNSNDEIKKKTFKRESILNFVNFV
                                                                                                                                                                                                                                                                                                                                               ISASPNKINFTLRRKKRF----LLRVSAVSYKEFAESALEETRKRIVLEPSHL-----
                                                                                                                                                                                                                                                                                                                                                                                                                             al protein
817 AA;
                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                      20.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                            95365 MW;
                                                                                                                                                                                                                                                                                                                                                                             59;
                                                                                                                                                                                                                                                                                                                                                                                      Score 90;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                         AC42730C8B9C3E4B CRC64;
                                                                                                                                                                                                                                                                                                                                                                            Mismatches
                                                                                                                                                                                                                                                                                                                                                                                    DB
. 15;

    Length

                                                                                                                                                                                                                                                                                                                                                                           129;
                                                                                                                                                                                                  -GESIKFFSPLVMWTRFSSSKEKH+
                                                                                                                                                                                                                                                                                                                                                                           Indels
                                                                             -YATLFPDSQPELNSM
                                                                                                                                                                                                                                                                                                                                                                           104;
                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                         447
                                                                                                                                                                                                                                                 173
                                                                                                                                                                                                                                                                                                 131
                                                                                                   305
                                                                                                                                                                         507
                                                                                                                                                                                                  208
                                                                                                                                                                                                                                                                         391
                                                                                                                                                                                                                                                                                                                                                 73
```

```
SEQUENCE FROM N.A.

SETRALN-ATCC 33530 / G-37;

MEDLINE-96026346; PubMed-7569993;

Fraser C.M., Gocayne J.D., White O., Adams M.D., Clayton R.A.,

Fleischmann R.D., Bult C.J., Kerlavage A.R., Sutton G., Kelley J.M.,

Fritchman J.L., Weidman J.F., Small K.V., Sandusky M., Fuhrmann J.L.,

Nguyen D.T., Utterback T.R., Saudek D.M., Phillips C.A., Merrick J.M.,

Tomb J.-F., Dougherty B.A., Bott K.F., Hu P.-C., Lucier T.S.,

Peterson S.N., Smith H.O., Hutchison C.A. III, Venter J.C.;

"The minimal gene complement of Mycoplasma genitalium.";

Science 270:397-403(1995).
SEQUENCE OF 492-567; 975-1103 AND STRAIN-ATCC 33530 / G-37; MEDILINE=94075230; PhDMed=8253680; Peterson S.N., Hu P.-C., Bott K.F.
                                                                                                                                                                                                                                                                      NCBI_TaxID=2097;
                                                                                                                                                                                                                                                                                     Bacteria; Firmicutes;
                                                                                                                                                                                                                                                                                   Mollicutes;
 K.F.,
                                                 1111-1225
                                                                                                                                                                                                                                                                                   Mycoplasmataceae;
Hutchison C.A.
III;
                                                                                                                                                                                                                                                                                 Mycoplasma
```

01-FEB-1996 (Rel. 33, Created)
01-FEB-1996 (Rel. 33, Last sequence update)
15-JUN-2002 (Rel. 41, Last annotation update)
DNA polymerase III polC-type (EC 2.7.7.7) (PolIII).

MYCGE

STANDARD;

PRT;

1451

A

Mycoplasma POLC OR MG031.

genitalium.

```
δð
                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ş
                                                                                               Š
                                                                                                                                             g
                                                                                                                                                                                      Ş
                                                                                                                                                                                                                                  В
                                                                                                                                                                                                                                                                                                                                                             Ş
                                                                                                                                                                                                                                                                                                                                                                                                           망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ρ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENTATION OF THE STREET REPRESENT
RESULT
                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
Best Local S
Matches 59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Pfam; PF02231; PHP_N; 1.
Pfam; PF02231; PHP_N; 1.
SMART; SM00479; EXOIII; 1.
SMART; SM00481; POLIIIAc; 1.
TIGRFAMs; TIGR00573; dnaq; 1.
Transferase; DNA-directed DNA polymerase; DNA replication;
Nuclease; Exonuclease; Complete proteome.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             J. Bacteriol. 175:7918-7930(1993).
-!- FUNCTION: REQUIRED FOR REPLICATIVE DNA SYNTHESIS.
POLYMERASE ALSO EXHIBITS 3' TO 5' EXONUCLEASE ACT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    -!- SUBCELLULAR LOCATION: C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    sequencing.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               "A survey of the Mycoplasma genitalium genome by using random
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    InterPro; IPR004013;
InterPro; IPR003141;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             InterPro;
12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CATALYTIC ACTIVITY: N deoxynucleoside triphosphate = N diphosphate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  + {DNA}(N).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SUBFAMILY.
                                                             375
                                                                                                                                               321
                                                                                                                                                                                           279
                                                                                                                                                                                                                                    287
                                                                                                                                                                                                                                                                               220
                                                                                                                                                                                                                                                                                                                           246
                                                                                                                                                                                                                                                                                                                                                                    160
                                                                                                                                                                                                                                                                                                                                                                                                               186
                                                                                                                                                                                                                                                                                                                                                                                                                                                           119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               126 DKKYKILIEQELSNPNFLSYENDELKAQCQTKELTEWLYQKSKSFIFWMNNAGFKNFNFI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               U39682;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      62 TRK-RIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMA--IENETMQVFDFA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           73
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MG031
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           U02208; AAD12500.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8 GFS-IGSCFKAPNPPVLISASPNKINFTLRR-----RKKRFLLRVSAVSYKEFAESALEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Similarity
                                                                                                                                                                                                                                                                                                                                                         QDKYYNKIMSIYHKYAETFPWGGKLTGESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GFNELNEGFKADNESF-----
                                                           KFYEVAKKYDLK
                                                                                                                                                                                                                                    --WIKAHIQV--
                                                                                                                                                                                                                                                                         QAWLEMTIQVREEMEPSHVRANCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLRDF-
                                                                                                                                                                                                                                                                                                                    ESLTGKKTLNI---YVTDFQLGGSL-----ILKWSYTDEKKIEGITIGN-----
                                                                                                                                                                                                                                                                                                                                                                                                             ALYPIDKNESKLKVKAVTVSQYDKQFETKVFATEFIPIHKINQQIDDVKIIGQIFELKTH
                                                                                                    ----IGKSYETR 319
                                                                                                                                             RLDLSKQKRVELVFHTKMTAFDGIND----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           IPR000520; Exonuclease.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               416 5
1451 AA;
                                                                                                                                                                                    ------TVSDKRSI----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ; AAC71247.1; -.
; AAD12336.1; -.
; AAC43185.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Exonuclease; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             5.2%;
15.9%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PHP_C.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  167499 MW;
                                                           386
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Cytoplasmic (By similarity)
THE DNA POLYMERASE TYPE-C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               65;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score 89;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                      MEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTDY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Mismatches 130;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      -KLTITEKENEPFFKSKNSFSSVTIAIIKDYFHSFFSK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2DB9E6951F41AAEF CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DB 1;
38;
                                                                                                                                             --IEEYAQFAKERGWKAITVTDKDNIHIYP
                                                                                                                                                                                                                                  -ERDPNTQILYGIVREINPVEIPNNYK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length 1451;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels 118;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SIS. THIS DNA ACTIVITY (BY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FAMILY. POLC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Hydrolase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                               320
                                                                                                                                                                                                                                                                                                                                                                                                                                                      159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  185
                                                                                                                                                                                                                                                                                                                                                                  219
                                                                                                                                                                                                                                                                                                                                                                                                           245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  61
                                                                                                                                                                                                                                                                                                                      286
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ρ
                                                                                                                                         밁
                                                                                                                                                                               ΩV
                                                                                                                                                                                                                             문
                                                                                                                                                                                                                                                                    δÃ
                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                         δ
                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ş
                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
Best Local :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           _CHICK
APB_CHICK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE FROM N.A.

MEDLINE-88137960; PubMed=3436530;

Kirchgessner T.G., Heinzmann C., Svenson K.L., Gordon D.A.,

Nicosia M., Lebherz H.G., Lusis A.J., Williams D.L.;

Negulation of chicken apolipoprotein B: cloning, tissue

distribution, and estrogen induction of mRNA.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss institute of Bioinformatics and the EMBL outstation the European Bioinformatics institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APOB.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               01-OCT-1989 (Rel. 12, Created)
01-OCT-1989 (Rel. 12, Last sequence update)
01-OCT-1989 (Rel. 12, Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Plasma; Lipid transport; VLDL; LDL; Chylomicron; Heparin-binding;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             EMBL; M18421; AAA48595.1; -. PIR; A29626; A29626.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               P11682;
01-OCT-1989
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CARBOHYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Cholesterol metabolism; Glycoprotein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             <del>-</del>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gene 59:241-251(1987)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Apolipoprotein B (Fragment).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NON_TER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FUNCTION: APOLIPÓPROTEIN B IS A MAJOR PROTEIN CONSTITUENT OF CHYLOMICKONS, VLDL AND LDL. IT FUNCTIONS AS A RECOGNITION SIGNAL FOR THE CELLULAR BINDING AND INTERNALIZATION OF LDL PARTICLES BY THE AFOB/E RECEPTOR.

INDUCTION: WITHIN 24 HOURS AFTER ESTRADIOL ADMINISTRATION, APOB MRNA IS INCREASED FIVE- TO SEVEN-FOLD IN LIVER BUT IS UNCHANGED IN INTESTINE AND KIDNEY.

SIMILARITY: WEAK, WITH THE C-TERMINAL 10 % OF HUMAN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APOLIPOPROTEIN B.
                                                      353
                                                                                                                                                                                      197
                                                                                                                                                                                                                                                                                                                                                                                                           144
                                                                                                                                                                                                                                                                                                                                                               94
                                                                                                                                                                                                                                                                                                                                                                                                                                                    34 TLRRRKKRFLLRVSAVSYKEFAESALEETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Similarity
             K----TFID
                                                      VRE----GELRIDVPFDWEYINQMPQK--SREALRNKV---
                                                                                               VREEMEPSHVRANCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLRDFLFNGVDELGT
                                                                                                                                      KAKLQEIYGQLSDSQEKLINVAKMLIDLTVEKYSTFMKYIFELLRWFEQATADSIKPYIA
                                                                                                                                                                                  -----MWTRFSSSKEK----HKAL-----FSAFLEY---YQAWLEMT-----IQ
                                                                                                                                                                                                                             LTDQVRELVENYRQEYYDLITDVEGKGRQKVMELSSAAQEKIRYWSAVAKRKINEHNRQV
                                                                                                                                                                                                                                                                         LTDQT----
                                                                                                                                                                                                                                                                                                                    -----VKYYEVEDKVL-----GLLKNLMDTLVIWYNEYAK------DLSDLVTR
                                                                                                                                                                                                                                                                                                                                                             FKSSKIRLLRSMAIENETMQVFDFAGFMEPEYDTPIFCANFFTSTNVNIVVLDLNPL-HQ 152
                                                                                                                                                                                                                                                                                                                                                                                                           SLAENVKKYISQIKNFSQKTLQK--LSENLQQLVLYIKALREEYFDPTTLGWS-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    433 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STANDARD;
                                                                                                                                                                                                                                                                         -DYQDKYYNKIMSIYHKYAETFPWGGKLTGESIKFFSPLV-------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           158
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    50847 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  5.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               50;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score 88.5;
Pred. No. 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  N-LINKED (GLCNAC. FD8808C9CFF48925
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             433
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Atherosclerosis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DB 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               102;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 433;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (POTENTIAL)
                                                      ELTRALIQQGVEQ-GT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           95;
```

Gaps

16;

93

194

352

228

399

292

₽

400

RKWEEMQAFID

410

STANDARD;

PRT;

549

8

```
RESULT AND SOLUTION OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE O
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     P06279; Q45519;
O1-JAN-1988 (Rel. 06, Created:
O1-FEB-1996 (Rel. 33, Last sec
16-OCT-2001 (Rel. 40, Last and
Alpha-amylase precursor (EC 3,
glucanohydrolase).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             _BACST
AMY_BACST
P06279; Q4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE ..... Karp M., Laucement Shominen I., Karp M., Laucement Shominen I., Karp M., Laucement Shominen II., Karp M., Laucement Shominen II. Sheminen Shominen II. Sheminen Shominen                                                                                                                                                                                                                                                                                                    This SWI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Idota Y., Yamagata H., Udaka S.;
"Efficient synthesis and secretion
protein-producing Bacillus brevis 4
stearothermophilus amylase gene.";
J. Bacteriol. 164:1182-1187,1985).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 INATE H., Sasaki T., Tsuboi A., Yamagata H., Tsukagoshi N., Ud
"Complete nucleotide sequence of a thermophilic alpha-amylase
homology between prokaryotic and eukaryotic alpha-amylases at
active sites.":
EMBL; M11450;
                                                                                   or send
                                                                                                                                                                                                                                                                    the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          New
[5]
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MEDLINE-86195857; PubMed-3009417; Gray G.L., Mainzer S.E., Rey M.W., Carmona C., Requadt C.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Bacillus stearothermophilus.
Bacteria; Firmicutes; Bacillales;
NCBI_TaxID=1422;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Tsukagoshi N.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MEDLINE=86059211; PubMed=2999073;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE OF 1-122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Carmona C., Requart C., Sequence and Intermophilic alpha-amylases "Structural genes encoding the thermophilic alpha-amylases Bacillus stearothermophilus and Bacillus licheniformis.";
J. Bacteriol. 166:635-643(1986).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MEDLINE-86008166;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE FROM N.A.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Nakajima R., Imanaka T., Aiba
"Nucleotide sequence of the Ba
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE FROM N.A.,
MEDLINE-85234394; P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Biochem.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Bacteriol. 163:401-406(1985).
                                                                                                                                                                                                                                                   s SWISS-PROT entry is copyright. It is produced through ween the Swiss Institute of Bioinformatics and the Expurpean Bioinformatics Institute. There are no restricted the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the sta
                                                                                                                                                                                                                                                                                                                                                                                                         Bacteriol. 164:1182-1187(1985).
CATALYTIC ACTIVITY: Endohydrollysis of 1,4-alpha-glucosidic linkages in oligosaccharides and polysaccharides.
SIMILARITY: BELONGS TO FAMILY 13 OF GLYCOSYL HYDROLASES, A KNOWN AS THE ALPHA-AMYLASE FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             sites.
                                                                                   s requires a license agreement (
an email to license@isb-sib.ch)
                                                                                                                           non-profit institu
and this statement
requires a license
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            98:95-103(1985).
    AAA22235
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Iritani S.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PubMed=3876333;
r., Tsuboi A., Y
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FROM N.A., AND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PubMed=3924897;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AND
                                                                                                                                                                                                               institutions as long as its content
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AND SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Last sequence update)
Last annotation update)
or (EC 3.2.1.1) (1,4-alpha-D-glucan
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Lautamo J., Knowles J., Mantsaelae P., mylase of Bacillus stearothermophilus:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PARTIAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sasaki T.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Bacillus
                                                                                                                                                                       is not removed.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          OF.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE OF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  n of a thermophilic alpha-amylase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Geobacillus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Lamsa M.H.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          35-39
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          stearothermophilus alpha-amylase
                                                                                                                                (See
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Takemura T., Ihara H.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          pp.129-137,
                                                                                                                           http://www.isb-sib
                                                                                                                                                                       Usage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              35-48
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Kindle K.L.,
                                                                                                                                                                       bу
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Plenum
                                                                                                                                                                                                                                                   restrictions
                                                                                                                                                                            and
                                                                                                                                                                                                                                                                                                        EMBL
                                                                                                                                                                                                                                                                                                        a collaboration -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 of.
                                                                                                                                                                       for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 cloning
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Udaka
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Press,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ALSO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                the
                                                                                                                                                                                                               in
                                                                                                                                                                            commercia]
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    S
                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   þу
```

```
δÃ
                                                 GN DT DT AC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                             RESULT 14
DPP3_YEAST
                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                          δõ
                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                  δÃ
                                                                                                                                                                                                                                                                                                                                                                     В
                                                                                                                                                                                                                                                                                                                                                                                                 δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 뭐
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matches
DPP3_YEAST brance.

DPP3_YEAST brance.

DPP3_YEAST brance.

DPP3_YEAST brance.

DPP3_YEAST brance.

DPP3_YEAST brance.

DPP3_YEAST brance.

16-OCT-2001 (Rel. 40, Created)

16-OCT-2001 (Rel. 40, Last sequence update)

15-JUN-2002 (Rel. 41, Last annotation update)

Probable dipeptidyl-peptidase III (EC 3.4.14.4) (DPP III) (Dipeptidyl arylamidase III).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CONFLICT
CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CHAIN
ACT_SITE
ACT_SITE
ACT_SITE
CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CONFLICT
CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CONFLICT
CONFLICT
CONFLICT
CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EMBL;
PIR; /
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           InterPro; IPR000461; Alpha_amylase.
Pfam; PF00128; alpha-amylase; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SIGNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Hydrolase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PIR; A24549; A24549.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A00845;
                                                                                                                                                                                                                                              489
                                                                                                                                                                                                                                                                            281
                                                                                                                                                                                                                                                                                                           429
                                                                                                                                                                                                                                                                                                                                       244
                                                                                                                                                                                                                                                                                                                                                                        380
                                                                                                                                                                                                                                                                                                                                                                                                      184
                                                                                                                                                                                                                                                                                                                                                                                                                                       327
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   273
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ^{229}
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          P06278;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       X02769; CAA26547.1;
M57457; AAA22227.1;
M13255; AAA22241.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                50
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 68;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Similarity
                                                                                                                                                                                                                                              NRSDTVTINS--DGWGEFKVNGGSVSVWVPRKTTVSTIAWSITTRPW--TDEFV
                                                                                                                                                                                                                                                                            NGVDELGTKTFIDYFPEYQTEDGTVS-----DKRSIIGKSYETRPWDLTGQFI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SYKEFAESALEETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIEN
                                                                                                                                                                                                                                                                                                           AYGTQHDYLDHSDIIGWTREGVTEKPGSGLAALITDGPGGSKWMYVGKQHAGKVFYDLTG
                                                                                                                                                                                                                                                                                                                                                                                                   LTGESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRANCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TDYQDKYY---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ETMQVF-DFAGFMEPEYDTPIFCA-----NFFTSTNVNIVVLDLNPLHQLTDQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NYDYLMYADLDMDHPEVVTELKSWGKWYVNTTNIDG-----
                                                                                                                                                                                                                                                                                                                                                                                                                                      ----NKFYTASKSGGTFDMRTLMTNTLMKDQPTLAVTFVDNHDTEPGQALQSWVDPW---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   IKFSFFPDWLSDVRSQTGKPLFTVGEYWSYDINKLHNYIMKTNGTMSLFDA-PLH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              549
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Glycosidase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                      QHKYLT----
                                                                                                                                                                                                                                                                                                                                                                       ----FKPLA-YAFILTRQEGYPCVF--YGDYYGIPQYNIPSLKSKIDPLLIARRDY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              62670 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              5.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Carbohydrate metabolism;
                                                                                                                                                                                                                                                                                                                               -WRAQ---KDPGHGLLKRL-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        . . . . .
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               47;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ALPHA-AMYLASE.
BY SIMILARITY.
BY SIMILARITY.
BY SIMILARITY.
BY SIMILARITY.
CONTROL OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Score 88.5;
Pred. No. 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              3A2DD93A955E79D3 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NKIMSIYHKYAETF--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     N (IN
N (IN
-> RTL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           P (IN REF. 2).
G (IN REF. 2 AND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               V (IN REF.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ₽₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     N IN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NI)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (IN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (IN REF. 2, 3) REF. 2 AN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  REF.
REF.
REF.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 REF. 3).
REF. 2 AN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             REF.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          REF.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        REF.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           REF.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DB 1; Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               120;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AND
AND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     w
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Signal.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AND 4)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AND 4)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ω<u>ω</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           <u>س</u>
.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ω<u>υ</u>ω
. . . .
                                                                                                                                                                                                                                                                                                                                       -VGEAKAKELLRDFLF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   -----FRLDAVKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                549;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 119;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PWGGK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1
```

109

488

```
δÃ
                                                                        δÃ
                                                                                                      망
                                                                                                                          ρ
                                                                                                                                                           뮹
                                                                                                                                                                                QΥ
                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                 δô
     밁
                                                     밁
                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                    QY
                                                                                                                                                                                                                                                                                                                                                                     Matches
                                                                                                                                                                                                                                                                                                                           Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                between the Swiss Institute of Bioinformat the European Bioinformatics Institute. The use by non-profit institutions as modified and this statement is not removed entitles requires a license agreement (See or send an email to license@isb-sib.ch)
                                                                                                                                                                                                                                                                                                                                                                                METAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE FROM N.A.;
STRAIN-S288c / FY73;
MEDLINE-96381248; PubMed-8789261;
                                                                                                                                                                                                                                                                                                                                                                                                                              InterPro; IPR005317; Peptidase_M49.
Pfam; PF03571; Peptidase_M49; 1.
Hypothetical protein; Hydrolase; Metalloprotease;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Mannhaupt G., Vetter I., Sch
"Analysis of a 26 kb region
Yeast 12:67-76(1996).
                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                           METAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EMBL; x91067; CAA62529.1; ALT_INIT.
EMBL; z74799; CAA99066.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              This SWISS-PROT entry is copyright. It is produced through between the Swiss Institute of Bioinformatics and the EM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Submitted (JUL-1996)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ansorge W.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            STRAIN-S288c;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Saccharomycetales;
NCBI_TaxID=4932;
                                                                                                                                                                                                                                                                                                                                                                                             ACT_SITE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MEROPS; M49.001;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE OF 548-711 FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Saccharomyces cerevisiae (Baker's yeast).

Eukaryota; Fungi; Ascomycota; Saccharomycotina; Saccharomycetes;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    peptide comprising four or more residues, with Also acts on dipeptidy! 2-naphthylamides. CORACTOR: BINDS I ZINC ION (BY SIMILARITY). SUBCELLULAR LOCATION: Cytoplasmic (Probable). SIMILARITY: BELONGS TO PEPTIDASE FAMILY M49.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CATALYTIC ACTIVITY: Release of an
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       S0005418; YOL057W.
     533
                            195
                                                     475
                                                                               160
                                                                                                       415
                                                                                                                                 147
                                                                                                                                                           356
                                                                                                                                                                                    108
                                                                                                                                                                                                                                                              240
                                                                                                                                                                                                                                     70
                                                                                                                                                                                                                                                                                        18
                                                                                                                                                                                                                                                                                                                l Similarity
78; Conserv
ILDIFGFHDVESQDKVIYAGYLQMARAGLLALEYWNPKTGKWGQPHMQARFSIMKTFMKH
                            LVMWTRFSSSKEKHKALFSAFLEYYQA-----
                                                                                                     NVSLGNILSAAAKSSSKHPPSFISQEDRPIFEKYQSDSFEVQVGIHELLGHGSGKLLTEF
                                                                                                                                                        VNNAEEFISLLPWSK-DYEKPIFNPPDFTSLEVLTFTGSGIPAGINIPNYDDVRLKIGFK
                                                                                                                                                                                                        SSQAHKEAQKLWVKDISPVIETNIGFIETYREPSGIIG--EFESLVAIQNKERTAKFSSL
                                                                                                                                                                                                                                     --PSHLQ
                                                                                                                                                                                                                                                            PSGQITLSNAVTKVEFIFGDHSRE--MRLVASYLKEAQKFAANDTQKAMLQEYINHFVTG
                                                                                                                                                                                                                                                                                    PNPPVLISASPNKINFTLRRRKKRFLLRVSAVSYKEFAESALEETRKRIVLE-----
                                                 TDGFNFDKENPPLGLDGKPVSTYYKVGET--WGSKFGQLAGPFEECRAEVIAMFLLTNKK
                                                                                                                                                                                  ENETMQVFDFAGFMEPEYDTPIFCANFFTS-----
                                                                                                                                                                                                                                                                                                                                                                  711 AA;
                                                                                                                                                                                                                                                                                                                                                                                             460
461
                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                 465
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Benes V.,
                                                                                                                                                                                                                                                                                                                                                                              460
461
465
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Saccharomycetaceae; Saccharomyces
                                                                                                                                                                                                                                                                                                                           5.1%;
                                                                                                                                                                                                                                                                                                                                                                    80510
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ç
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Rechmann S.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  the EMBL/GenBank/DDBJ databases
                                                                           -NKIMSIYHKYAETFPWG---GKLTG-----ESIKFF----SP
                                                                                                                                 -LNP----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Schwarzlose
                                                                                                                                                                                                                                                                                                                                                                    WW;
                                                                                                                                                                                                                                                                                                               70;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              on the
                                                                                                                                                                                                                                                                                                                            Pred.
                                                                                                                                                                                                                                                                                                                                                                            ZINC (CATALYTIC) (BY SIMILARITY)
BY SIMILARITY.
ZINC (CATALYTIC) (BY SIMILARITY)
                                                                                                                                                                                                                                                                                                                                       Score 88.5;
                                                                                                                                                                                                                                                                                                                                                                  C8FEBD32834FA683
                                                                                                                                                                                                                                                                                                               Mismatches
                                                                                                                                                                                                                                                                                                                            ŏ.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Schwager C.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              left
                                                                                                                                                                                                                                  EKYSSMTGLDGKTELOMLAFKSSKIRLLRSMAI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       c.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       N-terminal
                                                                                                                                                                                                                                                                                                                              17
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   There are no restrictions ng as its content is in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            arm
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Mitzel
                                                                                                                                                                                                                                                                                                                                         B
                                                                                                                                                                                                                                                                                                               156;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           of.
                                                                                                                                                                                                                                                                                                                                       <u>, .</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Usage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           l S., Feldmann
yeast chromoso
                                                                                                                                                                                  ---TNVNIVVLD--
                                                                                                                                                                                                                                                                                                                                                                  CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Teodoru
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        dipeptide from
ch broad specif:
                                                                                                                                                                                                                                                                                                                                      Length
                         -WLEMTIQVREEMEPSHVRA
                                                                                                                                                                                                                                                                                                                                                                                                        SIMILARITY)
                                                                                                                                                                                                                                                                                                                                                                                                                               Aminopeptidase;
                                                                                                                                                                                                                                                                                                               Indels 171;
                                                                                                                              ---LHQLTDQ-----TDY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           chromosome XV.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            c.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 jh a collaboration
EMBL outstation -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        e from a specificity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            tor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Voss
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ξ.
                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                        414
                                                                                                      474
                                                                                                                             159
                                                                                                                                                                                                                                  107
                                                                            194
                                                                                                                                                                                  146
                                                                                                                                                                                                                                                            297
                                                                                                                                                                                                                                                                                     69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        way
```

```
RESULT 15

ODOL_RICPR
ID ODOL_RICPR
ID ODOL_RICPR
AC Q9ZDY3;
DT 30-MAY-2000 (
DT 30-MAY-2000 (
DT 16-OCT-2001 (
DT 16-OCT-2001 (
DT 16-OCT-2001 (
DT 16-OCT-2001 (
DT 16-OCT-2001 (
DT 16-OCT-2001 (
DT 16-OCT-2001 (
DT 16-OCT-2001 (
DT 16-OCT-2001 (
DT 16-OCT-2001 (
DT 16-OCT-2001 (
DT 16-OCT-2001 (
DT 16-OCT-2001 (
DT 16-OCT-2001 (
DE ACTORIA (
DE SUCA OR RP188 (
DE SUCA OR RP189 (
DE SEQUENCE FROM SUCAL (
DE SEQUENCE (
DE SEQUENCE (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE SUCAL (
DE 
  멍
                                         δ
                                                                                                         밁
                                                                                                                                                           δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       δõ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               뮹
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δÃ
                                                                                                                                                                                                                         Query Match
Best Local S
Matches 77
                                                                                                                                                                                                                                                                                                                                                                               EMBL; AJ235270; CAA14647.1; ...
InterPro; IPR001017; Dehydrogenase_E1.
InterPro; IPR000360; Transketclase.
Pfam; PF00676; E1_dehydrog; 1.
Pfam; PF02779; transket_pyr; 1.
TIGRFAMS; TIGR00239; 2oxo_dh_E1; 1.
Glycolysis; Oxidoreductase; Flavoprotein; Thiamine pyrophosphate;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MEDLINE=99039499; PubMed=9823893;
Andersson S.G.E., Zomorodipour A., Andersson J.O.,
Sicheritz-Ponten T., Alsmark U.C.M., Podowski R.M.,
Eriksson A.-S., Winkler H.H., Kurland C.G.;
"The genome sequence of Rickettsia prowazekii and th
mitochondria.";
                                                                                                                                                                                                                                                                                                                                            Complete proteome SEQUENCE 936 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       entitles requires a license agreement (S or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         the European Bioinformatics Institute. The use by non-profit institutions as long modified and this statement is not removed.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  entities requires a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Nature 396:133-140(1998).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Bacteria; Proteobacteria; alpha subdivision; Rickettslaceae; Rickettsleae; Rickettsia.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SUCA OR RP180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     30-MAY-2000 (Rel. 39, Created)
30-MAY-2000 (Rel. 39, Last sequence update)
16-CCT-2001 (Rel. 40, Last annotation updat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE FROM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NCBI_TaxID=782;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Rickettsia prowazekii
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ketoglutarate dehydrogenase).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2-oxoglutarate dehydrogenase E1 component
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FUNCTION: THE 2-OXOĞLUTARATE DEHYDROGENASE COMPLEX CATALYZES THE OVERALL CONVERSION OF 2-OXOĞLUTARATE TO SUCCINYL-COA & CO(2). IT COMTĂINS MULTIPLE COPIES OF 3 ENZYMATIC COMPONENTS: 2-OXOĞLUTARAT DEHYDROGENASE (E1), DIHYDROLIPOAMIDE SUCCINYLTRANSFERASE (E2) ANI LIPOAMIDE DEHYDROĞENASE (E3) (BY SIMILARITY).

CATALYTIC ACTIVITY: 2-OXOĞLUTARATE + lipoamide - S-SUCCINYLTINJÜT SUCCINYLTINĞEN COPÂCTOR: THIAMINE PYROPHOSPHATE (BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SUBUNIT: HOMODIMER (BY SIMILARITY)
                                                                                                            500
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  593
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         241
                                                                                                                                                                                                                         77; Conservative
LQDLGTKLCEIPKDFAINPKLIRLFEVRKTTLTTDQPIDWATAEQLAF-AHLLCSGI---
                                                 LQMLAFKSSKI------RLLRSMAIENETM---QVFDFAGFMEPEYDTPIFCANFFTS
                                                                                                                                                                 KKRFLLRVSAVSYKEFAESALEETRKRIVLEPSHLQEKY-----SSMTGLDGKTE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RSTVTPDLASLRDIVLSKRLPRRQFIQSNSYIDDNNKVTLKEYDETPQGMLQSFL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLRDFL-----FNGVDELGTKTFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               STDKNFLKLEMNSTNDDFAIKLDKSLIKTAGHECVKDYLKHLHVYKCSGDVEQGSKYFID
                                                                                                                                                                                                                                                                                                                                         ĀΑ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           STANDARD;
                                                                                                            -EYEQ-
                                                                                                                                                                                                                                                                                                                                            105795 MW;
                                                                                                                                                                                                                                                 5.1%;
                                                                                                                                                                                                                            49;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          YFPEYQ--TEDGTVSDKRSIIGKSYETRPWDLTGQFI 328
                                                                                                                                                                                                                      Score 88.5; D
Pred. No. 24;
49; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PRT;
                                                                                                                                                                                                                                                                                                                                         30EA24895B4758AC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           936
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      There are no restrictions ng as its content is in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        B
                                                                                                                                                                                                                                                                           DB 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (E)
                                                                                                            HFFEGYWKGISRIRGKDAITGVNKKI-
                                                                                                                                                                                                                         129;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Usage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Rickettsiales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1.2.4.2)
                                                                                                                                                                                                                                                                              Length
                                                                                                                                                                                                                                                                                                                                            CRC64;
                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            the origin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               γď
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Naeslund
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (Alpha-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2-OXOGLUTARATE
                                                                                                                                                                                                                         ; 68
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               of.
                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     707
                                                    137
                                                                                                                                                                 88
603
                                                                                                         547
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  652
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      293
                                                                                                                                                                                                                         20;
```

Search Job ti	Db Qy	Qу	Оу	Фр
Search completed: Job time : 24 secs	276 778	232 718	180 663	138 604
Search completed: June 24, 2003, 18:37:11 Job time : 24 secs	276 RDFLFNGVDELG-TKTFIDYFPEYQTEDGTVSDKRSIIGKSY 316 : :              :   :       778 HKYAVSKLDELGENTTFIPILDEV-TKIDTNNVTKVILCSGKVY 820	EMEPSHYRANCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKELL	180 WGGKLTGESIKFFSPLVMW-TRESSSKEKHKALFSAFLEYYQA-WLEMTIQVRE 231 	138 TNVNIVVLDLNPLHQLTDQTDYQDKYYNKIMSIYHKYAETFP 179
		275	231 717	179 562

```
Result
No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Minimum
Maximum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Database :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              OM protein - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Post-processing: Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Word size
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       on:
     Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DB seq
                                                                                                                                                                                                                                                                                                                                                                                         Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US-09-870-406A-33
329
1 MALSMEFGFSTGSCEV:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     length: 0
length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                         Query
Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     June 24, 2003, 18:53:01; Search time 16 Seconds (without alignments) 605.009 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            OLIGO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  262574 seqs,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gapop 60.0 ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Issued_Patents_AA:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MALSMEFGFSIGSCFKAPNP.....SIIGKSYETRPWDLTGQFIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GenCore version 5.1.6 Copyright (c) 1993 - 2003 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /cgn2_6/ptodata/1/iaa/5A_COMB.pep:*
/cgn2_6/ptodata/1/iaa/5B_COMB.pep:*
/cgn2_6/ptodata/1/iaa/6A_COMB.pep:*
/cgn2_6/ptodata/1/iaa/6B_COMB.pep:*
/cgn2_6/ptodata/1/iaa/B_CTUS_COMB.pep:*
/cgn2_6/ptodata/1/iaa/PCTUS_COMB.pep:*
                                                                                                                                                                                                                                                                                                                                                                                         Length
                                                                                                                                                                                                                                                                                                                                                                                         DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    29422922 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gapext 60.0
                                        US-09-425-638A-69
US-09-425-638A-22
US-09-543-004-22
US-09-543-004-22
US-08-599-171A-29
US-08-66-5908-29
US-09-662-737-31
US-09-562-737-37
US-09-562-737-38
US-09-562-737-38
US-08-318-365-4
US-08-318-365-4
US-08-315-1728-15
US-09-425-638A-68
US-08-315-1728-15
US-09-543-004-68
US-08-313-774-4
US-09-3131-75
US-09-3131-75
US-09-3131-75
US-09-3131-75
US-09-3131-75
US-09-3131-75
US-09-3131-75
US-09-3131-75
US-09-3131-75
US-09-3131-75
US-09-3131-75
US-09-3131-75
US-09-3131-75
US-09-3131-75
US-09-3131-75
US-09-3131-75
US-09-3131-75
US-09-3131-75
US-09-3131-75
                                                                                                                                                                                                                                                                                                                                                                                                                                 SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                      Description
  sequence
sequence
sequence
sequence
sequence
sequence
sequence
sequence
sequence
sequence
                                                                                                                                                                                                                                    Sequence
Sequence
Sequence
Sequence
                                                                                                                                                                                                                                                                                                                                 Sequence
Sequence
Sequence
                                                                                                                                                                                                         Sequence
Sequence
                                                                                                                                                                                                                                                                                           Sequence
Sequence
                                                                                                                                                                    Sequence
                                                                                                                                                                                Sequence
                                                                                                                                                                                                                                                                                                                      Sequence
37, Appl
4, Appli
2, Appli
12, Appli
12, Appli
15, Appli
68, Appli
4, Appli
4, Appli
4, Appli
4, Appli
5, Appli
5, Appli
66, Appli
66, Appli
66, Appli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       329
                                                                                                                                                                                                                                                                                                                                                             69,
                                                                                                                                                                                                                                    ; FEATURE:
US-09-425-638A-69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RESULT 1
US-09-425-638A-69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sequence 69, Application US/09425638A Patent No. 6342587 GENERAL INFORMATION:
  Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FILE REFERENCE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LENGTH: 1:
TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ORGANISM: Homo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        sapiens
```

6 1.8 76 1 US-08-848-252-4 6 1.8 86 4 US-09-134-001C-5516 6 1.8 93 2 US-08-341-843B-32 6 1.8 93 2 US-08-427-497E-37 6 1.8 109 4 US-09-425-638A-20 6 1.8 109 4 US-09-425-638A-30 6 1.8 109 4 US-09-425-638A-41 6 1.8 109 4 US-09-425-638A-41 6 1.8 109 4 US-09-425-638A-42 6 1.8 109 4 US-09-425-638A-42 6 1.8 109 4 US-09-425-638A-42 6 1.8 109 4 US-09-425-638A-42 6 1.8 109 4 US-09-425-638A-43 6 1.8 109 4 US-09-425-638A-43 6 1.8 109 4 US-09-425-638A-43 6 1.8 109 4 US-09-543-004-20 6 1.8 109 4 US-09-543-004-20 6 1.8 109 4 US-09-543-004-21 6 1.8 109 4 US-09-543-004-21 6 1.8 109 4 US-09-543-004-21 6 1.8 109 4 US-09-543-004-21
.8 76 1 US-08-848-252-4 .8 86 4 US-09-134-001C .8 93 2 US-08-427-497E .8 93 2 US-08-427-497E .8 109 4 US-09-425-638A .8 109 4 US-09-425-638A .8 109 4 US-09-425-638A .8 109 4 US-09-425-638A .8 109 4 US-09-425-638A .8 109 4 US-09-425-638A .8 109 4 US-09-425-638A .8 109 4 US-09-425-638A .8 109 4 US-09-425-638A .8 109 4 US-09-425-638A .8 109 4 US-09-425-638A .8 109 4 US-09-425-638A .8 109 4 US-09-425-638A .8 109 4 US-09-543-004-2 .8 109 4 US-09-543-004-2 .8 109 4 US-09-543-004-2 .8 109 4 US-09-543-004-2 .8 109 4 US-09-543-004-2 .8 109 4 US-09-543-004-2 .8 109 4 US-09-543-004-2 .8 109 4 US-09-543-004-2
1 US-08-848-252-4 4 US-09-134-001C 2 US-08-427-497E 2 US-08-427-497E 4 US-09-425-638A- 4 US-09-425-638A- 4 US-09-425-638A- 4 US-09-425-638A- 4 US-09-425-638A- 4 US-09-425-638A- 4 US-09-425-638A- 4 US-09-425-638A- 4 US-09-425-638A- 4 US-09-425-638A- 4 US-09-425-638A- 4 US-09-425-638A- 4 US-09-425-638A- 5 US-09-425-638A- 6 US-09-425-638A- 6 US-09-543-004-2 7 US-09-543-004-2 8 US-09-543-004-4
-08-848-252-4 -09-134-001C08-341-843B08-427-497E09-425-638A09-543-004-2
-08-848-252-4 -09-134-001C08-341-843B08-427-497E09-425-638A-

## CURRENT APPLICATION NUMBER: US/09/425,638A CURRENT FILING DATE: 1999-10-22 NUMBER OF SEQ ID NOS: 129 SEQ ID NO 69 LENGTH: 11 APPLICANT: Carlos F. Barbas III, Christoph Rader, Gerd Ritter, Sydney Welt an APPLICANT: Lloyd J. Old TITLE OF INVENTION: A33 ANTIGEN SPECIFIC IMMUNOGLOBULIN PRODUCTS AND USES THE LUD 5630

ALIGNMENTS

RESULT 2 US-09-543-004-69 ; Sequence 69, Application US/09543004 ; Patent NO. 6346249 ; Patent NO. 6346249 ; GENERAL INFORMATION:     Carlos F. Barbas III, Christoph Rader, Gerd Ritter, Sydney Welt an APPLICANT: Lloyd J. Old ; APPLICANT: Lloyd J. Old ; TITLE OF INVENTION: A33 ANTIGEN SPECIFIC IMMUNOGLOBULIN PRODUCTS AND USES THE FILE REFERENCE: UJD 5630.1 ; CURRENT APPLICATION NUMBER: US/09/543,004 ; CURRENT FILING DATE: 2000-04-04 ; PRIOR APPLICATION NUMBER: 09/425,638 ; PRIOR FILING DATE: 1999-10-22 ; REATURE: 1999-10-22 ; LENGTH: 11 ; TYPE: PRT ; ORGANISM: Homo sapiens ; FEATURE: US-09-543-004-69	Query Match 2.1%; Score 7; DB 4; Length 11; Best Local Similarity 100.0%; Pred. No. 3.4; Matches 7; Conservative 0; Mismatches 0; Indels 0; Gaps 0; Qy 277 DFLFNGV 283          Db 4 DFLFNGV 10

2.1%;

Score 7;

B 4.

Length 11;

뮵 8

```
US-08-599-171A-29
                                                                                                  RESULT 5
                                                                                                                                                                                                                                                                  ; FEATURE:
US-09-543-004-22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-09-543-004-22
                                                 Sequence 29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-09-425-638A-22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-09-425-638A-22
                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                       Query Match
Best Local S
                                                                                                                                                                                                                                                                                                                                             NUMBER OF SEQ ID NOS:
SEQ ID NO 22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 22, Application US/09543004 Patent No. 6346249
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GENERAL INFORMATION:
APPLICANT: Car
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sequence 22, Application US/09425638A Patent No. 6342587
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQ ID NO 22
                                    GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Matches
                                                                                                                                                                                                                                                                                                                                                                                                      CURRENT APPLICATION NUMBER: US/O CURRENT FILING DATE: 2000-04-04
                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT: Carlos F. Barbas III, Christoph Rader, Gerd Ritter, Sydney Welt and APPLICANT: Lloyd J. Old
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Best Local Similarity
Matches 7; Conserv
                                                                                                                                                                                                                                                                                                                                                                           PRIOR APPLICATION NUMBER: PRIOR FILING DATE: 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CURRENT APPLICATION NUMBER: US/09/425,638A CURRENT FILING DATE: 1999-10-22 NUMBER OF SEQ ID NOS: 129
                                                                                                                                                                                                                                                                                                                  LENGTH: 10
TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TITLE OF INVENTION: FILE REFERENCE:
                                                                                                                                                                                                                                                                                           ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LENGTH: 109
TYPE: PRT
ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICANT: Lloyd J. Old
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FEATURE:
         TITLE OF
                                                                                                                                                                                                                                                                                                                                                                                                                                        [LE REFERENCE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                    TLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Local Similarity
les 7; Conser
                                                                                                                                                                         277 DFLFNGV 283
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  277
                                                                  29,
                                                                                                                                             27 DFLFNGV 33
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               277 DFLFNGV 283
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       27
                                                                                                                                                                                                                                                                                                                                109
                                                       5814473
                                                                                                                                                                                                        Similarity 7; Conserv
      INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DFLFNGV 33
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DFLFNGV 283
                                                                 Application US/08599171A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DFLFNGV 10
                    WARREN,
                                                                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Carlos F. Barbas III, Christoph Rader, Gerd Ritter, Sydney Welt and
                                                                                                                                                                                                                                                                                                                                                                                                                                    LUD 5630
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LUD 5630
 Patrick V.
TRANSAMINASES AND AMINOTRANSFERASES
                                                                                                                                                                                                                     2.1%;
100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         100.08; F1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2.1%;
                                                                                                                                                                                                                                                                                                                                                           1999-10-22
129
                                                                                                                                                                                                                                                                                                                                                                                                                                           A33 ANTIGEN SPECIFIC IMMUNOGLOBULIN PRODUCTS AND USES THERE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A33 ANTIGEN SPECIFIC IMMUNOGLOBULIN PRODUCTS AND USES THEREO
                                                                                                                                                                                                                                                                                                                                                                                                                   US/09/543,004
                                                                                                                                                                                                        0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Score 7;
Pred. No.
                                                                                                                                                                                                                       Pred. N
                                                                                                                                                                                                                                                                                                                                                                                        09/425,638
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Pred. No. 3.4; Mismatches
                                                                                                                                                                                                       Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Mismatches
                                                                                                                                                                                                                    No.
                                                                                                                                                                                                                     DB 4;
o. 26;
                                                                                                                                                                                                                                  Length 109;
                                                                                                                                                                                                     0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 109;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0;
                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                    0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0;
                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                    0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0;
                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local Similarity
Thes 7; Conserv.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Qy
                                                                                                                                                                                                                                                                                                                                                                                                 RESULT 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-08-599-171A-29
                                                                                                                                                                                                                                                                                                                                                   Sequence 29, Application US/08646590B Patent No. 5962283
                                                                                                                                                                                                                                                                                                                                      GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                 08-646-590B-29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TELEFAX: 201-994-1744
INFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
                                                            SOFTWARE: FastEEQ for Windows Version CURRENT APPLICATION DATA:
APPLICATION WITHOUT APPLICATION WITHOUT APPLICATION WITHOUT APPLICATION WITHOUT APPLICATION WITHOUT APPLICATION WITHOUT APPLICATION WITHOUT APPLICATION WITH
PRIOR APPLICATION DATA:
APPLICATION NUMBER:
                                                                                                                                    COMPUTER READABLE FORM: MEDIUM TYPE: Diskett
                                                                                                                                                                                                                                                                                  APPLICANT: Warren, Patrick V.
APPLICANT: Swanson, Ronald V.
TITLE OF INVENTION: TRANSAMINASES AND AMINOTRANSFERASES
                                                                                                                                                                                                                                                        CORRESPONDENCE ADDRESS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TOPOLOGY: LI
                                                                                                                                                                                                                                                                           NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  REFERENCE/DOCKET NUMBER: 33
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ATTORNEY/AGENT INFORMATION:
NAME: HERRON, CHARLES J.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CLASSIFICATION: 435
PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SOFTWARE: WORD PERFECT CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              COMPUTER READABLE FORM:
MEDIUM TYPE: 3.5 INCH DISKETTE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NUMBER OF SEQUENCES: 3: CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                             STREET: 4
                            APPLICATION NUMBER: US/01
FILING DATE: 08-May-1996
CLASSIFICATION: 435
                                                                                                                                                                    COUNTRY: UZIP: 92037
                                                                                                                     COMPUTER:
                                                                                                                                                                                                  STATE:
                                                                                                                                                                                                                                             ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                REGISTRATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CLASSIFICATION: 435
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   OPERATING SYSTEM:
SOFTWARE: WORD P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TELEPHONE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICATION NUMBER: FILING DATE: Concu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                              270 KAKELLR 276
                                                                                                                                                                                                                                                                                                                                                                                                                                            22 KAKELLR 28
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 07068
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ROSELAND
NEW JERSEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AMINO ACIDS
                                                                                                                                                                                               CA
                                                                                                                                                                                                             E: Fish & Richardson, P.C.
4225 Executive Square, Suite 1400
a Jolla
                                                                                                                                                                                SD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         6 BECKER FARM ROAD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2.1%; Score 7; DB 2; ilarity 100.0%; Pred. No. 79; Conservative 0; Mismatches
                                                                                                                  IBM Compatible
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   IBM PS/2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     201-994-1700
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CARELLA, BYRNE, BAIN, GILFILLAN, CECCHI, STEWART & OLSTEIN
                                                                                                                                  Diskette
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PROTEIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Concurrently
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PERFECT 5.1
                                                         US/08/646,590B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     US/08/599,171A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               28,019
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   331400-38
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 398;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels
```

0

Gaps

0;

멍 δÃ

밁

```
밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local Similarity
""+" 7; Conserve
; MOLECULE TYPE: US-09-069-226-29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         us-09-069-226-29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-08-646-590B-29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TELECOMMUNICATION INFORMATION:
TELEPHONE: 619/678-5070
TELEPAX: 619/678-5099
INFORMATION FOR SEQ ID NO: 29:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GENERAL INFORMATION:
                                                                   TELEFAX: 201-994-1744
NFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             tent No.
                                                                                                                                                                                                                                                                                                                                                COMPUTER READABLE FORM:
MEDIUM TYPE: 3.5 INCH DISKETTE
                                                                                                               TELEPHONE: 201-994-1700
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MOLECULE TYPE:
FRAGMENT TYPE:
                                                                                                                                                                                                                                                                                               CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                       FILING DATE:
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                  CLASSIFICATION:
PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TITLE OF INVENTION:
                                                                                                                                           NAME: HERRON, CHARLES J. REGISTRATION NUMBER: 28, REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                 APPLICATION NUMBER: US/09/069,226 FILING DATE:
                                                                                                                                                                                                                                                                                                          OPERATING SYSTEM: MS-DOS
SOFTWARE: WORD PERFECT 5.1
                                                                                                                                                                                                                                                                                                                                                                                                             CITY: ROSELAND
STATE: NEW JERSEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                       ADDRESSEE: CARELLA, BYRNE, BAIN, GILFILLAN, ADDRESSEE: CECCHI, STEWART & OLSTEIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TOPOLOGY:
                             TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                          COMPUTER:
                                                                                                                                                                                                                                                                                                                                                                                                   COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                            STREET:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NAME: Haile, Ph.D., Lisa A. REGISTRATION NUMBER: 38,347
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FILING DATE:
                                                        LENGTH:
                                                                                                                                                                                                                      APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICATION NUMBER: PCT/US97/01094
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                270 KAKELLR 276
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               29, Application US/09069226
5, 6013509
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    22 KAKELLR 28
                                   H: 398 AMINO ACIDS
AMINO ACID
                                                                                                                                                                                                                                                                                                                                                                                      07068
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                          6 BECKER FARM ROAD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         398 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                   USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                WARREN, Patrick V.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative
                                                                                                                                                                                                                                                                                                                                        IBM PS/2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     protein
internal
             PROTEIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        21-January-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      09-FEB-1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2.1%; but
100.0%; Pr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TRANSAMINASES AND AMINOTRANSFERASES
                                                                                                                                                                                                                      08/599,171
                                                                                                                                                       28,019
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              38,347
                                                                                     29:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 7; ; Pred. No.
                                                                                                                                              331400-38
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   09010/017001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DB 2;
5. 79;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length 398;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0
```

```
Ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
망
                                                                                                               ; MOLECULE TYPE:
; FRAGMENT TYPE:
US-09-412-184-29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RESULT 8
US-09-412-184-29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 29
Patent No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches
                                                                  Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local
                                                       Matches
                                                                                                                                                                                                                                                                                                                                                                                          FILLNO CLASSIFICATION:
CLASSIFICATION DATA:
PRIOR APPLICATION NUMBER: US/08/646,590
APPLICATION NUMBER: 08/899,171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GENERAL INFORMATION:
                                                                                                                                                                                                                  INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                               FILING DATE: 08-May-1996
APPLICATION NUMBER: 08/599
FILING DATE: 09-FEB-1996
PRIOR APPLICATION DATA:
APPLICATION NUMBER: PCT/US
FILING DATE: 21-January-19
                                                                                                                                                                                                                                             NAME: Haile, Ph.D., Lisa A. REGISTRATION NUMBER: 38,347 REFERENCE/DOCKET NUMBER: 09) TELECOMMUNICATION INFORMATION: TELEPHONE: 619/678-5070
                                                                                                                                                                                                   SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SOFTWARE: FastSEQ for CURRENT APPLICATION DATA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 COMPUTER READABLE FORM: MEDIUM TYPE: Diskett
                                                                                                                                                                                                                                                                                                         ATTORNEY/AGENT INFORMATION:
NAME: Haile, Ph.D., Lisa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICANT: Warren, Patrick V. APPLICANT: Swanson, Ronald V.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CORRESPONDENCE ADDRESS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICANT: Swanson, Ronald V.
TITLE OF INVENTION: TRANSAMINASES AND AMINOTRANSFERASES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               COMPUTER: IBM Compatible
OPERATING SYSTEM: Windows
                                                                                                                                                          TOPOLOGY:
                                                                                                                                                                                                                                TELEFAX:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               COUNTRY: US
ZIP: 92037
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CITY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       STREET:
                                                                                                                                                                                                                                                                                                                                 CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ADDRESSEE:
                                                                                                                                                                                     CENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          270 KAKELLR 276
             270 KAKELLR 276
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           29, Application US/09412184
5. 6268188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            22 KAKELLR 28
22 KAKELLR 28
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Similarity
7; Conservat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            La Jolla
: CA
                                                                                                                                                                     amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       4225 Executive Square, Suite 1400
                                                                                                                                                                                     398 amino acids
                                                                                                                                                                                                                                619/678-5099
                                                       Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Fish & Richardson, P.C
                                                                                                                                                                                                                                                                                                                                               21-January-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Diskette
                                                                                                                            internal
                                                                                                                                             protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2.1%;
                                                                   2.1%; Score 7; 100.0%; Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Windows95
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         for Windows Version
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US/09/412,184
                                                                                                                                                                                                                                                                                                                                                                                                                                     US/08/646,590
                                                                                                                                                                                                                                                                                                                                                               PCT/US97/01094
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  %; Score 7; DB 3
%; Pred. No. 79;
0; Mismatches
                                                      0;
                                                                                                                                                                                                                                                                           09010/017001
                                                                     Pred. No.
                                                       Mismatches
                                                                      DB 4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DB 3;
                                                                                 Length 398;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 398
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0;
                                                      0;
                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0,
```

RESULT 9
US-09-562-737-31
; Sequence 31, Application US/09562737
; Patent No. 6428967
; GENERAL INFORMATION:

APPLICANT:

Herz, Joachim Gotthardt, Michael

0

```
Дb
                                                                                                                                                                                                                                                                                                         δÃ
                                                                                                                                                                                                                                                                                                                          Query Match
Best Local Similarity
"-+-hes 7; Conserve
                                                                                                                                                                                                              RESULT 11
US-09-562-737-37
                                                                                                                                                                                                                                                                                                                                                                                                     ; OTHER INFORMATION: Description of Artificial Sequence: Synthetic; OTHER INFORMATION: Sequence US-09-562-737-36
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ; FEATURE:
; OTHER INFORMATION:
; OTHER INFORMATION:
US-09-562-737-31
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-09-562-737-36
                                                                                                                                                                           Sequence 37, Appli
Patent No. 6428967
SEQ ID NO 37
LENGTH: 830
                                                                                                                                                               GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence 36, Application US/09562737 Patent No. 6428967
                                                            CURRENT APPLICATION NUMBER: US/09/562,737
CURRENT FILING DATE: 2000-05-01
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQ ID NO 31
                                                                                              APPLICANT: Herz, Joachim
APPLICANT: Gotthardt, Michael
TITLE OF INVENTION: LDL Receptor Signaling Pathways
FILE REFERENCE: UTSW0708
                                 SOFTWARE:
                                               NUMBER OF SEQ ID NOS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SOFTWARE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CURRENT APPLICATION NUMBER: US/09/562,737
CURRENT FILING DATE: 2000-05-01
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NUMBER OF SEQ ID NOS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICANT: Gotthardt, Michael
TITLE OF INVENTION: LDL Receptor Signaling Pathways
FILE REFERENCE: UTSW0708
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CURRENT APPLICATION NUMBER: US/09/562,737
CURRENT FILING DATE: 2000-05-01
                                                                                                                                                                                                                                                                                                                                                                                                                                                    TYPE: PRT
ORGANISM: Artificial Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SOFTWARE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NUMBER OF SEQ ID NOS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TITLE OF INVENTION: LDL Receptor Signaling Pathways FILE REFERENCE: UTSW0708
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FILE REFERENCE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ORGANISM: Artificial Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LENGTH: 830
TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ENGTH: 830
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Local Similarity les 7; Conserv
                                                                                                                                                                                                                                                                           809 AFLEYYO 815
                                                                                                                                                                                                                                                                                                         214 AFLEYYQ 220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         809 AFLEYYO 815
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        214 AFLEYYQ 220
                               PatentIn Ver. 2.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PatentIn Ver. 2.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PatentIn Ver.
                                                                                                                                                                                            Application US/09562737
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Herz, Joachim
                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Description of Artificial Sequence: Synthetic Sequence
                                                                                                                                                                                                                                                                                                                                                   2.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  132
                                                                                                                                                                                                                                                                                                                                     0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       0;
                                                                                                                                                                                                                                                                                                                                                    Score 7;
Pred. No.
                                                                                                                                                                                                                                                                                                                                     Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ŏ.
                                                                                                                                                                                                                                                                                                                                                    DB 4; Length 830; . 1.5e+02;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DB 4; Length 830; . 1.5e+02;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                  0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0;
                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                  0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0;
```

```
밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-08-938-365-4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RESULT 13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NUMBER: Patt SOFTWARE: Patt SEQ ID NO 38
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RESULT 12
US-09-562-737-38
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US-09-562-737-37
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local Similarity 100.0%;
Matches 7; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Patent No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 4, Application US/08938365 Patent No. 5989909
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Patent No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 38,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GENERAL INFORMATION: APPLICANT: Yang,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CURRENT APPLICATION NUMBER: US/09/562,737
CURRENT FILING DATE: 2000-05-01
NUMBER OF SEQ ID NOS: 132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT: Herz, Joachim
APPLICANT: Gotthardt, Mid
TITLE OF INVENTION: LDL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FILE REFERENCE:
                                                                        CURRENT APPLICATION NUMBER: US/No / CURTON DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DATE: OF TILING DAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     OTHER INFORMATION: Description of Artificial Sequence: Synthetic OTHER INFORMATION: Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ORGANISM: Artificial Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   OTHER INFORMATION:
OTHER INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ORGANISM: Artificial Sequence
PRIOR APPLICATION DATA:
APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FEATURE:
                                                                                                                                                                                                                                                                          COUNTRY: USA
ZIP: 02110-2804
COMPUTER READABLE FORM:
MEDIUM TYPE: Diskette
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CORRESPONDENCE ADDRESS:
ADDRESSEE: Fish & Richardson
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICANT: Yang, Pan TITLE OF INVENTION: 1
                                                              FILING DATE: 2: CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                            STREET: 225 | CITY: Boston
                                                                                                                                                                                                                                                                                                                                                                                                                    STATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Local Similarity les 7; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        809 AFLEYYQ 815
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               214 AFLEYYQ 220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  809 AFLEYYQ 815
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             214 AFLEYYO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   6428967
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PatentIn Ver. 2.1
                                                                                                                                                                                                                                                                                                                                                                                                              MA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Application US/09562737
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            225 Franklin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                     26-SEP-1997
N: 514
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         N: LDL Receptor Signaling Pathways
UTSW0708
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Description of Artificial Sequence: Synthetic Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      HUCHORDIN AND USES THEREOF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Michael
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 7;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 7;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Pred.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DB 4; Le
o. 1.5e+02;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                .
1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      4; Le .5e+02;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length 830
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 830
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
```

0;

ATTORNEY/AGENT INFORMATION:

REGISTRATION NUMBER:

Meiklejohn, Ph.D., Anita L. RATION NUMBER: 35,283

09404/040001

```
Query Match
Best Local Similarity
~~*~hes 7; Conserve
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ; MOLECULE TYPE: protein US-08-938-365-4
              ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-08-343-760A-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RESULT 14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TELEFAX: 617/542-8906
TELEX: 200154
INFORMATION FOR SEQ ID NO: 4:
SEQUENCE CHARACTERISTICS:
LENGTH: 940 amino acids
TYPE: amino acids
TYPE: amino acids
TOPOLOGY: linear
                                                                                                                                                                                            REGISTRATION NUMBER: 28,758
REFERENCE/DOCKET NUMBER: 3100
TELEPHONE: 415) 363-5556
TELEPHONE: (415) 363-5556
TELEPAC: (415) 362-5418
INFORMATION FOR SEQ ID NO: 2:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   pequence 2, Application US/08343760A Patent No. 5679783 GENERAL INFORMATION:
                                              Matches
                                                                          Query Match
                                                                                                                  STRANDEDNESS:
TOPOLOGY: line
MOLECULE TYPE: [
                                                                                                                                                                                                                                                                                                                                  SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/343,760A
FILING DATE: 22-NOV-1994
CLASSIFICATION: 536
                                                                                                                                                                                                                                                                                                                                                                                              COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STREET: FOUL
CITY: San Francisco
STATE: CA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                REFERENCE/DOCKET NUMBER: 09
TELECOMMUNICATION INFORMATION:
TELEPHONE: 617/542-5070
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT: De Robertis, Edward M
APPLICANT: Sasai, Yoshiki
TITLE OF INVENTION: Tissue Differentiation Affecting
TITLE OF INVENTION: Factor and Composition
                                                                                                                                                                                                                                                                                                                     ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NUMBER OF SEQUENCES: 3
CORRESPONDENCE ADDRESS:
                                            Local Similarity les 7; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ADDRESSEE:
                                                                                                                                                                              LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     275 KHKALFS 281
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     207 KHKALFS 213
207 KHKALFS 213
                                                                                                                                                                amino acids
                                                                                                                                                                                                                                                                                                    Siebert, J. Suzanne
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     E: Majestic, Parsons, Siebert & Hsue Four Embarcadero Center, Suite 1450
                                                                                                                             Jinear
                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                  protein
                                      2.1%; 500
100.0%; Pr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score 7; 1; Pred. No.
                                                                                                                                                                                                                                                                         3100.1
                                            Mismatches
                                                         DB 1; Le
o. 1.7e+02;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DB 2; Ler
o. 1.7e+02;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 940;
                                                                       Length 941;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0;
                                            0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0;
                                            0
                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0
                                          0
```

Search completed: June 24, 2003, 18:56:16 Job time: 16 secs

```
밁
 В
                             δÃ
                                                                                                                                ; ORGANISM: Alga (Mesotaeinum) US-08-904-871-12
                                                                                                                                                                                                                                                                                                                                                                                                                                RESULT 15
US-08-904-871-12
                                                                                                                                                                                                SOFTWARE: Pa
                                                           Query Match 2.:
Best Local Similarity 100
Matches 7; Conservative
                                                                                                                                                                                                                                                                                                                                                                                              Sequence 12, Application US/08904871 Patent No. 6046014
                                                                                                                                                                                                                                                                             APPLICANT: Lagarias, John C
APPLICANT: Murphy, John T
TITLE OF INVENTION: PHYTOFLUORS AS FLUORESCENT LABELS
FILE REFERENCE: 2500.134USO UC OTT Lagarias Patent
CURRENT APPLICATION NUMBER: US/08/904,871
CURRENT FILING DATE: 1997-08-01
                                                                                                                                                                                                                                 NUMBER OF SEQ ID NOS: 16
                                                                                                                                                                                                                                             EARLIER APPLICATION NUMBER: 60/023,217
EARLIER FILING DATE: 1996-08-02
                                                                                                                                                                LENGTH: 1142
TYPE: PRT
905 EAKAKEL 911
                  268 EAKAKEL 274
                                                                                                                                                                                                                                                                                                                                                                                  INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 276 KHKALFS 282
                                                                                                                                                                                                              PatentIn Ver. 2.0
                                                                            2.1%;
                                                             b; Score 7; DB 3
b; Pred. No. 2e+
0; Mismatches
                                                                                DB 3; I
5. 2e+02;
                                                                0;
                                                                                             Length 1142;
                                                               Indels
                                                                0;
                                                                Gaps
```

		<i>L</i> =		* .	40 ·			. Line
	· .							
٠	1							
								•
	\$					t.		
	• · · ·							
	e e							- 1
							2	
						,	-X-	·
		the thirty of						
je:							,	
est.	er er				and the second			
			*					X
			*					
			2	ia.	2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			
			, a		2 4			
7			*					
								· · · · · · · · · · · · · · · · · · ·
					grafi de la companya	•		
	11 13		*					
			*.	. •				
		,					· .	
					40		. (*	
		<b>*</b>			5/1			
٠,				-				
*								
15								1 2 1 A
× 12					2	•		
· · ·					7 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 -			
					<u>.a</u> (			,
No.	1.5					. 00		
-,								1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
.8				•	124			
		*	•					
		a - x - 10						
					7 P			
		· .				5		
					4			
lar yan						, , , , , , , , , , , , , , , , , , ,	a i parade	* * * * * * * * * * * * * * * * * * *

```
Result
No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Minimum DB
Maximum DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   OM protein - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence:
                                                                                                                                                                                                                                                                                                                                                            and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                score greater than
                                                                                                                                                                                                                                                                                                                                                                                                     Pred. No.
      1681
1330
110.5
110.5
110.5
110.5
110.5
110.5
                                                                                                                                                                                                                                                   Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       seq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       length: 0
length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                            is the number of results predicted by chance to have ater than or equal to the score of the result being p
                                                                                                                                                                                                                                                 Query
Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           BLOSUM62
Gapop 10.0 ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          June 24, 2003, 17:17:40; Search time 44 Seconds (without alignments) 996.351 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US-09-870-406A-33
1724
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             908470 seqs, 133250620 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1 MALSMEFGFSIGSCFKAPNP...
      98.99.99.97.55
97.55
6.4.1.15
6.4.4.46
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A_Geneseq_101002:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GenCore version 5.1.6 Copyright (c) 1993 - 2003 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /SIDS2/gcgdata/geneseq/geneseqp-emb1/AA1980.DAT:*
/SIDS2/gcgdata/geneseq/geneseqp-emb1/AA1981.DAT:*
/SIDS2/gcgdata/geneseq/geneseqp-emb1/AA1981.DAT:*
/SIDS2/gcgdata/geneseq/geneseqp-emb1/AA1983.DAT:*
/SIDS2/gcgdata/geneseq/geneseqp-emb1/AA1984.DAT:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /SIDS2/gcgdata/geneseq/geneseqp-emb1/AA1985.DAT:*
/SIDS2/gcgdata/geneseq/geneseqp-emb1/AA1986.DAT:*
/SIDS2/gcgdata/geneseq/geneseqp-emb1/AA1987.DAT:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /SIDS2/gcgdata/geneseq/geneseqp-embl/AA1989.DAT:*
/SIDS2/gcgdata/geneseq/geneseqp-embl/AA1999.DAT:*
/SIDS2/gcgdata/geneseq/geneseqp-embl/AA1991.DAT:*
/SIDS2/gcgdata/geneseq/geneseqp-embl/AA1992.DAT:*
/SIDS2/gcgdata/geneseq/geneseqp-embl/AA1993.DAT:*
/SIDS2/gcgdata/geneseq/geneseqp-embl/AA1993.DAT:*
/SIDS2/gcgdata/geneseq/geneseqp-embl/AA1995.DAT:*
/SIDS2/gcgdata/geneseq/geneseqp-embl/AA1995.DAT:*
/SIDS2/gcgdata/geneseq/geneseqp-embl/AA1995.DAT:*
/SIDS2/gcgdata/geneseq/geneseqp-embl/AA1996.DAT:*
/SIDS2/gcgdata/geneseq/geneseqp-embl/AA1997.DAT:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /SIDS2/gcgdata/geneseq/geneseqp-embl/AA1988.DAT:*
                                                                                                                                                                                                                                                                                                                                                                                                                                            /SIDS2/gcgdata/geneseq/geneseqp-embl/AA2000.DAT:*
/SIDS2/gcgdata/geneseq/geneseqp-embl/AA2001.DAT:*
/SIDS2/gcgdata/geneseq/geneseqp-embl/AA2002.DAT:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /SIDS2/gcgdata/geneseq/geneseqp-embl/AA1998.DAT:*
/SIDS2/gcgdata/geneseq/geneseqp-embl/AA1999.DAT:*
                                                                                                                                                                                                                                                 Length DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gapext 0.5
                                                                                                                                                                                                                                                   Ħ
                         AAM50863
AAG18223
AAG18224
AAG18225
AAR7826
AAR78249
AAR72449
AAW31406
AAY99770
                                                                                                                                                                                                                                                                                                                   SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      .....SIIGKSYETRPWDLTGQFIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         908470
                                      Arabidopsis phytoc
Arabidopsis thalia
Arabidopsis thalia
Arabidopsis thalia
Bacillus stearothe
Bacillus stearothe
Bacillus stearothe
                                                                                                                                                                                                                                        Description
B. stearothermophi
Termamyl-like-alph
                                                                                                                                                                                                                                                                                                                                                                              printed,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           329
```

bicans hy	0	23	359	5.1	88
protein	AAM78839	22	1885	5.1	88.5
Human breast cance	•	22	1884	•	88.5
protein seq	320	22	1156	•	88.5
Staphylococcus epi	CD.	23	573	•	88.5
Plasmid pTUB616 he	AAP70580	æ	559	٠	88.5
	ABB90169	23	532	•	88.5
	AAY25153	20	515	5.1	88.5
sp.	AAW48263	19	515		88.5
Bacillus sp. alpha	AAW31502	18	515	5.1	88.5
llus stea	AAY99604	21	514	5.1	88.5
Wild type Termamyl	AAY07383	20	514	•	88.5
õ	AAY15417	20	514		88.5
	AAW12955	17	514		88.5
ermamyl	AAY07388	20	512		88.5
	AAR62443	15	369		89
ans Fr	AAR72855	16	855	•	ø
Human protein sequ	AAB93302	22	775		89.5
6	AAP70579	8	572		9
₽.	ABB44566	22	1712		90
Drosophila melanog	ABB60014	22	501		90
	ABB54658	23	1046		
rn.	AAM79089	22	952		
$^{\circ}$	ABP39222	23	727		90.5
	ABB65581	22	830		91
3	ABB60761	22	1348	5.3	
Lactococcus lactis	ABB53527	23	386		•
	AAM79823	22	1886		94.5
pha		œ	549		104.5
B. stearothermophi	AAG65879	22	548		105
An alpha-amylase (	$\sim$	20	548		105
stearo	974	19	4	6.1	105
acillus TERMAN	01215	23	$\vdash$		110.5
aci	B4785	23	515	6.4	0
B. stearothermophi	ABB06935	23	515	6.4	110.5

## ALIGNMENTS

RESULT 1
AAM50863
ID AAM5

AAM50863 standard; Protein; 329 AA

Arabidopsis phytochromobilin synthase HY2

07-MAY-2002 (first entry)

AAM50863;

08-JUN-2000; 2000US-210286P. 26-FEB-2001; 2001US-271758P. 29-MAY-2001; 2001US-0210286. 05-JUN-2001; 2001WO-US18326 Protein Key Arabidopsis thaliana. HY2; biliverdin reductase; phytochromobilin synthase; phytochrome; phytofluor; plant; enzyme. (REGC ) UNIV CALIFORNIA. 13-DEC-2001. WO200194548-A2. Peptide /label= Transit\_peptide
46..329 Location/Qualifiers /label= Mature\_protein

Lagarias

Ŧ,

Frankenberg N,

Gambetta GA,

Montgomery BL;

```
RESULT 2
AAG18223
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 The present sequence is that of the HYZ protein of Arabidopsis thaliana ecotype Columbia, as predicted from cDNA sequence analysis. HYZ is a ferredoxin-dependent biliverdin reductase that the first is a ferredoxin-dependent biliverdin reductase that the first is a predicted molecular mass of 38.1 kDa. The first 45 N-terminal cannon acid residues are predicted to form a chloroplast transit the peptide, suggesting that the HYZ protein is localised in the chloroplast. HYZ is related to a family of proteins found in the conversion of biliverdin, which are useful e.g. for the conversion of biliverdin to phytoblin and the assembly of holophytochromes or phytofluors. A claimed method of producing the conversion of biliverdin to phytoblin and the assembly of holophytochromes or phytofluors. A claimed method of producing the converse of a apophytochrome involves co-expressing a haem converse of a photoactive holophytochrome and a ferredoxin-dependent bilin reductase in a cell, where the cell produces the photoactive holophytochrome and where the photochrome and/or the cell may be an algal, yeast, bacterial, plant, insect or family bilin reductase is preferably an HY2 family bilin reductase is preferably an HY2 family bilin reductase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
Best Local Similarity
                   Arabidopsis
                                              17-OCT-2000
                                                                         AAG18223;
                                                                                                AAG18223 standard; Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Novel isolated HY2 family bilin reductase having bilin reductase activity, useful for converting biliverdin to phytobilin, and for producing a photoactive holophytochrome and/or phytofluor -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                family
                                                                                                                                                                                            301
                                                                                                                                                                                                                          241
                                                                                                                                                                                                                                                                                 181
                                                                                                                                                                                                                                                                                                           181
                                                                                                                                                                                                                                                                                                                                      121
                                                                                                                                                                                                                                                                                                                                                               121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  326;
                                                                                                                                                                                                                                                                                                                                                                                         61
                                                                                                                                                                                                                                                                                                                                                                                                                  61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              bilin reductase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  3; Fig 3B; 102pp; English.
                                                                                                                                                                                                                                                                          MALSMEFGFSIGSCFKAPNPPVLISASPNKINFTLRRKKRFLLRVSAVSYKEFAESALE
                                                                                                                                                                                    EDGTVSDKRSIIGKSYETRPWDLTGQFIG 329
                                                                                                                                                                                                                                                                                                                                                                                   ETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIENETMQVFDFAGF
                                                                                                                                                                                                                                                                                                                                                                                                   ETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIENETMQVFDFAGF
                                                                                                                                                                    EDGTVSDKRSIIGKSYETRPWDLTGQFIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      329
                 thaliana protein fragment SEQ ID NO: 19545.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                           (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ₽,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            98.8%;
                                                                                                   327
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score 1703; DB 23;
Pred. No. 1.1e-166;
0; Mismatches 3;
                                                                                                 A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                 300
                                                                                                                                                                                                                                                                                                       240
                                                                                                                                                                                                                                                                                                                                  180
                                                                                                                                                                                                                                                                                                                                                                                     120
                                                                                                                                                                                                                                                                                                                                                                                                                                         60
 18-JUN-1999;
18-JUN-1999;
21-JUN-1999;
22-JUN-1999;
23-JUN-1999;
                                                                                                                                                                                                                                                                                                                               28-MAY-1999;
01-JUN-1999;
03-JUN-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  06-MAY-1999;
06-MAY-1999;
07-MAY-1999;
                                                                                                                                                                                                                                                                                                                                                                     24-MAY-1999;
25-MAY-1999;
27-MAY-1999;
                                                                 18-JUN-1999;
18-JUN-1999;
                                                                                                                                                                                                                    16-JUN-1999;
                                                                                                                                                                                                                                    16-JUN-1999;
                                                                                                                                                                                                                                               10-JUN-1999;
14-JUN-1999;
                                                                                                                                                                                                                                                                          10-JUN-1999;
                                                                                                                                                                                                                                                                                                     04-JUN-1999;
07-JUN-1999;
                                                                                               18-JUN
                                                                                                                                                                                           18-JUN
                                                                                                                                                                                                                                                                                                                                                                                                                                         19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            04-MAY-1999;
05-MAY-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Protein identification; signal transduction pathway; metabolic pathway; hybridisation assay; genetic mapping; gene expression control; promoter;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        30-APR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   16-APR-1999;
19-APR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               08-APR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            06-APR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            25-FEB-1999;
05-MAR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Arabidopsis thaliana.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          termination sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                    18-MAY-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               28-APR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              23-APR-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   25-FEB-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              06-SEP-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      EP1033405-A2
                                                                                                                       3-JUN-1999;
3-JUN-1999;
                                                                                                                                                  3-JUN-1999;
3-JUN-1999;
                                                                                                                                                                              -JUN-1999
                                                                                                                                                                                                                                                                                          -JUN-1999;
                                                                                             1-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2000EP-0301439
99US-0138847

99US-0139452

99US-0139453

99US-0139454

99US-0139454

99US-0139455

99US-0139456

99US-0139456

99US-0139459

99US-0139461

99US-0139461

99US-0139462

99US-0139462

99US-0139463

99US-0139463

99US-0139463

99US-0139463

99US-0139750

99US-0139753

99US-0139753

99US-01399753

99US-01399753
                                                                                                                                                                                                                                                                                                    99US-0132485.
99US-0132487.
99US-0132883.
99US-0134256.
99US-0134219.
99US-0134221.
99US-0134219.
99US-01342768.
99US-0135153.
99US-0135553.
99US-0135752.
99US-0136302.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   99US-0128234.
99US-0128714.
99US-0129845.
99US-0130077.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          99US-0130510
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        99US-0130449
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            99US-0121825
99US-0123180
```

ţ -5

XEXTXAXI

Вþ Š B δÃ В 20

В

δÃ

В Š

밁 δÃ

30-JUN-1999; 01-JUL-1999; 01-JUL-1999; 02-JUL-1999; 06-JUL-1999; 08-JUL-1999;

09-JUL-1999; 12-JUL-1999; 13-JUL-1999;

1999

19-JUL-1999; 19-JUL-1999; 20-JUL-1999; 20-JUL-1999;

1-JUL-1999; 2-JUL-1999;

9

19-JUL-1999; 19-JUL-1999; 19-JUL-1 19-JUL-1 .9-JUL-1999

6661

16-JUL-1999 16-JUL-1999 5-JUL-1999

```
밁
                                Š
                                              밁
                                                         Š
                                                                        밁
                                                                                    δÃ
                                                                                                   밁
                                                                                                             Š
                                                                                                                             밁
                                                                                                                                         δõ
                                                                                                                                                                                  Query Match
Best Local Similarity
Matches 326; Conserv
                                                                                                                                                                                18-OCT 1999
13-OCT 1999
13-OCT 1999
13-OCT 1999
14-OCT 1999
14-OCT 1999
14-OCT 1999
14-OCT 1999
14-OCT 1999
21-OCT 1999
22-OCT 1999
22-OCT 1999
23-OCT 1999
25-OCT 1999
26-OCT 1999
26-OCT 1999
28-OCT 1999
28-OCT 1999
28-OCT 1999
28-OCT 1999
                                                                                                                                                                                                                                                                                                                                                                                                29-SEP-1999;
04-OCT-1999;
05-OCT-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                       01-SEP-1999;
10-SEP-1999;
11-SEP-1999;
13-SEP-1999;
15-SEP-1999;
16-SEP-1999;
20-SEP-1999;
22-SEP-1999;
                                                                                                                                                                                                                                                                                                                                                                                    06-OCT-1999
07-OCT-1999
                                               179
        301
                     239
                                                           181
                                                                         119
                                                                                     121
                                                                                                   61
                                                                                                                61
                                             MALSMEFGFSIGSCFKAPNPPVLISASPNKINFTLRRKKRFLLRVSAVSYKEFAESALE
EDGTVSDKRSIIGKSYETRPWDLTGQFIG
                                                                       NCEAQHKYLTWRAQKDPGHGLLKRLVGEAKAKELLRDFLFNGVDELGTKTFIDYFPEYQT
                                                                                                                                                       Conservative
                                                                                                                                                                                9908-0151930
9908-01539758
9908-0154078
9908-0154079
9908-0155596
9908-0155596
9908-01558596
9908-0158659
9908-0158659
9908-0158659
9908-0158629
9908-0158629
9908-0158229
9908-0158229
9908-0158229
9908-0159233
9908-0159233
9908-0159239
9908-0159637
9908-0159637
9908-0160940
9908-0160940
9908-0160940
9908-0160980
9908-0161406
9908-0161359
9908-0161359
9908-0161359
9908-0161359
9908-0161359
9908-0161359
9908-0161359
9908-0161359
                                                                                                                                                             98
                                                                                                                                                             . 18;
                                                                                                                                                     ; Score 1698; Di
; Pred. No. 3.6e
0; Mismatches
         329
                                                                                                                                                      DB 21;
1.6e-166;
les 1;
                                                                                                                                                       Indels
                                                                                                                                                                   Length
                                                                                                                                                                    327;
                                                                                                                                                      2
                                                                                                                120
                                                                                                                             60
                                  300
                                              238
                                                           240
                                                                         178
                                                                                     180
                                                                                                   118
```

5-JUL-1999 7-JUL-1999

990S-0140354 990S-0140354 990S-0140991 990S-0142803 990S-0142803 990S-0142803 990S-0142803 990S-0144297 990S-0144005 990S-0144005 990S-0144325 990S-0144331 990S-0144331 990S-0144333 990S-0144333 990S-0144333 990S-0144333 990S-0145086 990S-0145086 990S-0145086 990S-0145102 990S-0145102 990S-0145102 990S-0145102 990S-0146310 990S-0147204 990S-0147204 990S-014814 990S-0147204 990S-014814 990S-014919 990S-0150866 990S-0150866 990S-0150866 990S-0151086

B-AUG-1999; D-AUG-1999; D-AUG-1999; D-AUG-1999;

-AUG-1999;

-AUG-1999;

AUG AUG AUG -AUG -AUG -AUG

-1999; -1999; -1999; -1999; -1999;

5-AUG-1999; 5-AUG-1999; 9-AUG-1999; 0-AUG-1999; 1-AUG-1999; 2-AUG-1999; 3-AUG-1999; 3-AUG-1999;

-AUG-1999;

1999; 1999; 1999; 1999;

```
RESULT 3
AAG18224
ID
AAG18224
ID
AAG18224
ID
AAG18224
AAG1
AAG18224
AAG1
AX
AAG18224
AAG1
AX
AAG18224
AAG1
AX
AAG18224
AAG1
AX
AAG18
AAG18224
AAG1
AX
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18
AAG18

                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      В
 30-APR-1999
30-APR-1999
30-APR-1999
05-MAY-1999
06-MAY-1999
06-MAY-1999
07-MAY-1999
11-MAY-1999
14-MAY-1999
14-MAY-1999
14-MAY-1999
14-MAY-1999
14-MAY-1999
19-MAY-1999
19-MAY-1999
20-MAY-1999
21-MAY-1999
21-JUN-1999
11-JUN-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         25-FEB-1999,
05-MAR-1999,
09-MAR-1999,
23-MAR-1999,
23-MAR-1999,
29-MAR-1999,
29-MAR-1999,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          21-APR-1999;
23-APR-1999;
23-APR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    16-APR-1999;
19-APR-1999;
21-APR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               06-APR-1999;
08-APR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    06-SEP-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Arabidopsis thaliana
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Protein identification; signal transduction pathway; metabolic pathway; hybridisation assay; genetic mapping; gene expression control; promoter; termination sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AAG18224 standard; Protein; 323 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EP1033405-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Arabidopsis thaliana protein fragment
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         17-OCT-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAG18224;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          25-FEB-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      EDGTVSDKRSIIGKSYETRPWDLTGQFIG 327
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (first
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2000EP-0301439
 990S-0126264
990S-0127462
990S-0128734
990S-0128714
990S-0130449
990S-0132407
990S-0132486
990S-0132486
990S-0132486
990S-0132486
990S-0132486
990S-0132486
990S-0132486
990S-0134218
990S-0134218
990S-0134219
990S-0134219
990S-0134219
990S-0134219
990S-0134219
990S-0134219
990S-0134219
990S-0134219
990S-0136921
990S-0136921
990S-0136921
990S-0136921
990S-0136921
990S-0136921
990S-0136921
990S-0136921
990S-0136921
990S-0136921
990S-0136921
990S-0136921
990S-0136921
990S-0136921
990S-0138941
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  99US-0121825.
99US-0123180.
99US-0123548.
99US-0125788.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQ ID NO: 19546.
    02-JUL-1999;
06-JUL-1999;
08-JUL-1999;
09-JUL-1999;
12-JUL-1999;
13-JUL-1999;
 09-AUG-1
09-AUG-1
10-AUG-1
11-AUG-1
11-AUG-1
13-AUG-1
13-AUG-1
16-AUG-1
17-AUG-1
                                                                                                                                                                                                                              28-JUL-1999;
02-AUG-1999;
02-AUG-1999;
02-AUG-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        28-JUN-1999;
29-JUN-1999;
30-JUN-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             21-JUN-1999;
22-JUN-1999;
23-JUN-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 18-JUN-1999;
18-JUN-1999;
18-JUN-1999;
18-JUN-1999;
18-JUN-1999;
18-JUN-1999;
18-JUN-1999;
18-JUN-1999;
18-JUN-1999;
                                                                                                                                                         03 - AUG
04 - AUG
04 - AUG
05 - AUG
05 - AUG
                                                                                                                              06-AUG
                                                                                                                                                                                                                                                                                          27 - JUL
                                                                                                                                                                                                                                                                                                                                                                          22-JUL-1999;
23-JUL-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                 21-JUL-1999;
22-JUL-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                             21-JUL-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 23-JUN-1999
                                                                                                                                                                                                                                                                                                                                                                                                      22-JUL-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                    22-JUL-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       20-JUL-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    20-JUL-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               19-JUL-1999;
19-JUL-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   16-JUL-1999;
16-JUL-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                14-JUL-1999;
15-JUL-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  24-JUN-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        18-JUN-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       18-JUN-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   19-JUL-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           19-JUL-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          19-JUL-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         19-JUL-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           -JUL-1999;
  ;-1999;
;-1999;
;-1999;
;-1999;
                                                                     -1999;
-1999;
                                                                                                                                                                                                       .1999;
                                                                                                                                                                                                                                                                                          1999
                                                                                                                                                                                                                                                                                                                                 1999;
1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1999;
1999;
                                                                                                   1999;
                                                                                                                               1999;
                                                                                                                                                            1999;
9908-0139750

9908-0139751

9908-0139899

9908-0140833

9908-0140833

9908-0140833

9908-0141287

9908-0141287

9908-0141287

9908-0141287

9908-0141287

9908-0141287

9908-0142920

9908-014314

9908-014331

9908-014331

9908-014331

9908-014331

9908-014331

9908-014331

9908-014331

9908-014331

9908-014331

9908-0145086

9908-014518

9908-014518

9908-014518

9908-014518

9908-014518

9908-014518

9908-014518

9908-014518

9908-014518

9908-014518

9908-014518

9908-014518

9908-014518

9908-014518

9908-014518

9908-014518

9908-014518

9908-014518

9908-014518

9908-014518

9908-014518

9908-014518

9908-014710

9908-014710

9908-014710

9908-014710

9908-014710

9908-014710

9908-014710

9908-014710

9908-014710

9908-014710

9908-014710

9908-014710

9908-014710

9908-014710

9908-014710

9908-014710

9908-014710

9908-014710

9908-014710

9908-014710

9908-014710

9908-014710

9908-014710

9908-014710

9908-014710

9908-014710

9908-014710
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 99US-0139456.
99US-0139457.
99US-0139458.
99US-0139459.
99US-0139460.
99US-0139461.
99US-0139463.
```

```
Query Match
Best Local Sim
Matches 322;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            18-AUG-1999
20-AUG-1999
20-AUG-1999
23-AUG-1999
25-AUG-1999
25-AUG-1999
27-AUG-1999
27-AUG-1999
27-AUG-1999
31-AUG-1999
31-AUG
                                                                                                                                                                                                                                                                                                                                                                                         14-OCT-1999
14-OCT-1999
18-OCT-1999
21-OCT-1999
21-OCT-1999
21-OCT-1999
21-OCT-1999
21-OCT-1999
21-OCT-1999
22-OCT-1999
22-OCT-1999
22-OCT-1999
25-OCT-1999
25-OCT-1999
25-OCT-1999
25-OCT-1999
26-OCT-1999
26-OCT-1999
                                                                                                                                                                                                                                                                                                        28-OCT-1999;
28-OCT-1999;
28-OCT-1999;
29-OCT-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               13-OCT-1999;
13-OCT-1999;
14-OCT-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       14-OCT-1999;
14-OCT-1999;
      125
                                               61
                                                                                       65
                                                                                                                                                                          Ģ
                                                                                                                                                                                                                                           Similarity
                                                                                                                           MEFGFSIGSCFKAPNPPVLISASPNKINFTLRRKKRFLLRVSAVSYKEFAESALEETRK
  YDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTDYQDKYYNKIMSIYHKYAETFPWGGKL 184
                                                                     RIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIENETMQVFDFAGFMEPE 124
                                            RIVLEPSHLQ--YSSMTGLDGKTELQMLAFKSSKIRLLRSMAIENETMQVFDFAGFMEPE
                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                      9908-0160814
9908-0160815
9908-0160980
9908-0160981
9908-0161408
9908-0161406
9908-0161406
9908-0161356
9908-0161356
9908-0161356
9908-0161920
9908-0161920
9908-0161923
9908-0161923
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                990S-0155486

990S-0156596

990S-0156596

990S-0157117

990S-0157865

990S-0157865

990S-0158232

990S-0158232

990S-0158232

990S-0159294

990S-0159294

990S-015929

990S-015929

990S-015929

990S-0159331

990S-015967

990S-015967

990S-0160747

990S-0160747
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   990S-0149426.
990S-0149723.
990S-0149930.
990S-0149930.
990S-0150884.
990S-0151066.
990S-0151080.
990S-0151330.
990S-0151330.
990S-0151330.
990S-0151330.
990S-0153760.
990S-0154018.
990S-0154018.
                                                                                                                                                                                                                                       97.5%;
                                                                                                                                                                                                                   0;
                                                                                                                                                                                                                                       Score 1681; DB 21;
Pred. No. 2e-164;
                                                                                                                                                                                                                     Mismatches
                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                           Length
                                                                                                                                                                                                                   2;
                                                                                                                                                                                                                   Gaps
                                                                                                                                60
                                            118
                                                                                                                                                                      64
  RESULT 4
AACHESULT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
14 - MAY - 1999;
14 - MAY 1999;
14 - MAY 1999;
18 - MAY 1999;
20 - MAY 1999;
21 - MAY 1999;
21 - MAY 1999;
22 - MAY - 1999;
25 - MAY - 1999;
27 - MAY - 1999;
28 - MAY - 1999;
                                                                                                                                                                                                                                                         30-APR-1999;
04-MAY-1999;
05-MAY-1999;
06-MAY-1999;
06-MAY-1999;
07-MAY-1999;
11-MAY-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                     19-APR-1999;
21-APR-1999;
23-APR-1999;
23-APR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               25-FEB-1999;
05-MAR-1999;
09-MAR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAG18225 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                      28-APR-1999,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    08-APR-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              01-APR-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         23-MAR-1999;
25-MAR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               06-SEP-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Arabidopsis thaliana
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Arabidopsis thaliana protein fragment SEQ ID NO: 19547.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             17-OCT-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AAG18225;
                                                                                                                                                                                                                                         14-MAY-1999
                                                                                                                                                                                                                                                                                                                                                                                                             30-APR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     29-MAR-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    25-FEB-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             16-APR-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    305
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (first
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2000EP-0301439
990S-0132485.
990S-0132863.
990S-0132863.
990S-0134219.
990S-0134218.
990S-0134219.
990S-0134270.
990S-0134370.
990S-0134370.
990S-0134374.
990S-0135124.
990S-013553.
990S-013553.
990S-0136782.
                                                                                                                                                                                                                                                                                                                                                                990S-0125788.
990S-0126785.
990S-0127462.
990S-0128734.
990S-0129845.
990S-0130077.
990S-0130510.
990S-0130510.
990S-0131449.
990S-0131448.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               99US-0121825.
99US-0123180.
99US-0123548.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                250
```

```
VSDKRSIIGKSYETRPWDLTGQFIG 329
                             YDTPIFCANFETSTNVNIVYLDLNPLHQLTDQTDYQDKYYNKIMSIYHKYAETFFWGGKL
VSDKRSIIGKSYETRPWDLTGQFIG 323
                                              304
                                                              238
                                                                              244
                                                                                              178
                               298
```

A

Protein identification; signal transduction pathway; metabolic pathway; hybridisation assay; genetic mapping; gene expression control; promoter: termination sequence.

δõ В δÃ

Ω 밁

אר הא היא היא הא היא היא היא היא היא היא ה	אים מים מים מים מים מים מים מים מים מים מ	PR PR PR PR PR PR PR PR	\$\frac{1}{2}\$ \$\	PR PR
23-JUL-1999; 23-JUL-1999; 26-JUL-1999; 27-JUL-1999; 27-JUL-1999; 27-JUL-1999; 27-JUL-1999; 28-JUL-1999; 02-AUG-1999; 02-AUG-1999; 03-AUG-1999; 04-AUG-1999;	19-JUL-1999 19-JUL-1999 20-JUL-1999 20-JUL-1999 20-JUL-1999 20-JUL-1999 21-JUL-1999 21-JUL-1999 22-JUL-1999 22-JUL-1999 22-JUL-1999 22-JUL-1999 22-JUL-1999 23-JUL-1999	01-JUL-1999 02-JUL-1999 06-JUL-1999 08-JUL-1999 09-JUL-1999 12-JUL-1999 13-JUL-1999 14-JUL-1999 16-JUL-1999 16-JUL-1999 16-JUL-1999 19-JUL-1999 19-JUL-1999 19-JUL-1999 19-JUL-1999		01-JUN-1999; 03-JUN-1999; 04-JUN-1999; 07-JUN-1999;
99US-0145218 99US-0145224 99US-0145276 99US-0145913 99US-0145918 99US-0145919 99US-0145386 99US-0146386 99US-0146388 99US-0147308 99US-0147204 99US-0147302	99US-0144334 99US-0144335 99US-0144352 99US-0144834 99US-0144884 99US-0144884 99US-0145086 99US-0145085 99US-0145087 99US-0145089 99US-0145089 99US-0145145	990S-0142154 990S-0142905 990S-0142803 990S-0142803 990S-014297 990S-0143542 990S-0143524 990S-0144085 990S-0144086 990S-0144331 990S-0144331 990S-0144331	0138 0138 0138 0139 0139 0139 0139 0139 0139 0139 0139	99US-0137222. 99US-0137528. 99US-0137502. 99US-0137724
·	·			
אק אק אק אק אק אק אק אק אק	קק קק קק קק קק קק קק קק קק קק קק קק קק	הקק קק הקק הקק הקק הקק הקק הקק הקק הקק		טי טי טי ט
22-001 25-001 25-001 25-001 25-001 26-001 26-001 28-001 28-001 28-001 28-001	13-0CI 14-0CI 14-0CI 14-0CI 14-0CI 14-0CI 18-0CI 21-0CI 21-0CI 21-0CI 21-0CI 21-0CI 21-0CI 21-0CI 21-0CI 21-0CI	20 - SEP 22 - SEP 23 - SEP 24 - SEP 24 - SEP 29 - SEP 29 - SEP 29 - SEP 29 - SEP 29 - SEP 29 - SEP 29 - SEP 29 - SEP 20 - SEP 20 - SEP 20 - SEP 20 - SEP 20 - SEP 20 - SEP 20 - SEP 20 - SEP 21 - SEP 21 - SEP 22 - SEP 23 - SEP 24 - SEP 26 - SEP 27 - SEP 27 - SEP 28 - SEP 29 - SEP 29 - SEP 20	09-AUG-1999 09-AUG-1999 11-AUG-1999 11-AUG-1999 11-AUG-1999 13-AUG-1999 13-AUG-1999 14-AUG-1999 18-AUG-1999 20-AUG-1999 20-AUG-1999 20-AUG-1999 20-AUG-1999 27-AUG-1999	R 05-AUG-1999; R 05-AUG-1999; R 06-AUG-1999;
99US-0160981 99US-0161408 99US-0161405 99US-0161405 99US-0161360 99US-0161360 99US-0161361 99US-0161361 99US-0161920 99US-0161920 99US-0161923 99US-0161923	99US-0159295 99US-0159329 99US-0159331 99US-0159331 99US-0159637 99US-0159638 99US-0159638 99US-0160741 99US-0160767 99US-0160768 99US-0160768 99US-0160710 99US-0160814 99US-0160815	990S-0154779 990S-0155486 990S-0155486 990S-0155699 990S-0156596 990S-0157117 990S-0157717 990S-0157717 990S-0158029 990S-0158029 990S-0158029 990S-0158029 990S-0158029	99US-0147493 99US-0148171 99US-0148171 99US-0148341 99US-014868 99US-0149368 99US-0149176 99US-0149176 99US-014972 99US-014972 99US-014972 99US-014993 99US-0150566 99US-0150566 99US-0151080	99US-0147192. 99US-0147260. 99US-0147303.

```
δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
                            Oxidation stable alpha amylases can be used for the simultaneous desizing and bleaching or scouring of a fabric comprising starch or starch derivatives. They exhibit a better heat stability, especially in the presence of oxidising agents. They are obtained from a parent alpha amylase by replacing one or more methionine residues with any amino acid different from Cys or Met, preferably Leu, Thr. Ala, Gly, Ser, Ile or Asp. The parent alpha amylase is derived from a Bacillus species. This sequence is the wild type
                                                                                                                                                                                                 WPI;
                                                                                                                                  Claim
                                                                                                                                                                                      N-PSDB;
                                                                                                                                                                                                                    Marcher D,
                                                                                                                                                                                                                                                               02-FEB-1994;
                                                                                                                                                                                                                                                                                     05-OCT-1994;
                                                                                                                                                                                                                                                                                                          10-AUG-1995
                                                                                                                                                                                                                                                                                                                                W09521247-A1
                                                                                                                                                                                                                                                                                                                                                     Bacillus stearothermophilus.
                                                                                                                                                                                                                                                                                                                                                                          Bacillus
                                                                                                                                                                                                                                                                                                                                                                                                                  Bacillus stearothermophilus alpha amylase (mature protein).
                                                                                                                                                                                                                                                                                                                                                                                                                                          17-JAN-1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                AAR78269;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAR78269
                                                                                                                                                                                                                                         (NOVO)
                      (unmodified) alpha
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Local
                                                                                                                                                  of an oxidation stable alpha-amylase \boldsymbol{\cdot} for simultaneous obleaching or scouring of fabrics contg. starch or starch
                                                                                                                                                                                                1995-283767/37
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               320
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             140
                                                                                                                                  8
                                                                                                                                                                                                                                                                                                                                                                                                amylase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              250;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    _
                                                                                                                                                                                                                                                                                                                                                                         thermostable; methionine; s amyloliquefaciens; Bacili
                                                                                                                                                                                                                                         NOVO-NORDISK AS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MTGLDGKTELQMLAFKSSKIRLLRSMAIENETMQVFDFAGFMEPEYDTPIFCANFFTSTN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    standard; Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRANCEAQHKYLTWRAQKDPGH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      VNIVVLDLNPLHQLTDQTDYQDKYYNKIMSIYHKYAETFPWGGKLTGESIKFFSPLVMWT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   VNIVVLDLNPLHQLTDQTDYQDKYYNKIMSIYHKYAETFPWGGKLTGESIKFFSPLVMWT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MTGLDGKTELQMLAFKSSKIRLLRSMAIENETMQVFDFAGFMEPEYDTPIFCANFFTSTN
                                                                                                                               Page
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PWDLTGQFIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PWDLTGQFIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRANCEAQHKYLTWRAQKDPGH
                                                                                                                                                                                                                    Nilsson
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                         (first
                                                                                                                                25;
                                                                                                                                                                                                                                                                                                                                                                                              oxidation; desizing; bleaching;
                                                                                                                                                                                                                                                               94DK-0000141
                                                                                                                                                                                                                                                                                    94WO-DK00371
                                                                                                                             37pp; English.
                      amylase.
                                                                                                                                                                                                                     ΤE,
                                                                                                                                                                                                                                                                                                                                                                                                                                         entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          250
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          100.0%;
                                                                                                                                                                                                                     Pedersen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    514
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0;
                                                                                                                                                                                                                                                                                                                                                                          Bacillus stearothermophilus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 1330; DB 21
Pred. No. 2e-128;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Mismatches
                                                                                                                                                                                                                     HH,
                                                                                                                                                                                                                                                                                                                                                                                   Bacillus licheniformis
                                                                                                                                                                                                                     Toft
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    21;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0;
                                                                                                                                                                                                                                                                                                                                                                                                scouring;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    250;
                                                                                                                                                    desizing h derivs.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                              o
G
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 259
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0
```

Sequence

```
밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local S
Matches 68
Variant alpha amylase enzymes which have improved washing and/or as detergent additives. The enzymes have one or more amino acid residues added, deleted or substituted. The variants can also be used for textile desizing prior to scouring, bleaching and dyein the variants have improved thermostability, acid/alkaline stabil
                                                                                                                                                                                                                                                                                                                                                                               Alpha amylase; variant; enzyme; detergent; additive; dishwas washing; Bacillus licheniformis; Bacillus amyloliquefaciens; Bacillus stearothermophilus; dyeing; bleaching; scouring; te
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAR72449 standard;
                                                                        Claim 34;
                                                                                            New Bacillus derived alpha-amylase variants - having amino actomodifications to improve washing and/or dishwashing performance
                                                                                                                                    N-PSDB;
                                                                                                                                                                                   Svendsen A,
                                                                                                                                                                                                                                  08-OCT-1993;
02-FEB-1994;
                                                                                                                                                                                                                                                                     05-OCT-1994;
                                                                                                                                                                                                                                                                                                                      WO9510603-A
                                                                                                                                                                                                                                                                                                                                            Bacillus stearothermophilus
                                                                                                                                                                                                                                                                                                                                                                                                                               Bacillus stearothermophilus alpha amylase (mature protein).
                                                                                                                                                                                                                                                                                                                                                                                                                                                          01-DEC-1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AAR72449;
                                                                                                                                                                                                                                                                                             20-APR-1995
                                                                                                                                                                                                                                                                                                                                                                      thermostable.
                                                                                                                                                                                                          (NOVO ) NOVO-NORDISK AS
                                                                                                                                                                        der
                                                                                                                                  1995-161790/21.
DB; AAQ88068.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   458
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  398
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 346
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                292
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               195
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          284
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        50
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                68;
                                                                                                                                                                       zee
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NYDYLMYADLDMDHPEVVTELKNWGKWYVNTTNIDG-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SYKEFAESALEETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIEN 109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DTVTINS--DGWGEFKVNGGSVSVWVPRKTTVSTIARPITTRPW--TGEFV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               HNKFYTASKSGGAFDMRTLMTNTLMKDQPTLAVTFVDNHDTEPGQALQSWVDPW-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       QDKYY---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TQHDYLDHSDIIGWTREGGTEKPGSGLAALITDGPGGSKWMYVGKQHAGKVFYDLTGNRS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               IKFSFFPDWLSYVRSQTGKPLFTVGEYWS-----YDINKLHNYITKTDGTMSLFDAPL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ETMQVF-DFAGFMEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTD-----Y
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DELGTKTFIDYFPEYQTEDGTVS----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                -QHKYLT-----WRAQ---KDPGHGLLKRL------VGEAKAKELLRDFLFNGV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ----FKPLA-YAFILTRQEGYPCVF--YGDYYGIPQYNIPSLKSKIDPLLIARRDYAYG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRANCEA--
                                                                        Page 11-12; 105pp;
                                                                                                                                                                      P,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                    Thellersen
                                                                                                                                                                                                                                                                                                                                                                                                                                                       (first
                                                                                                                                                                                                                                93DK-0001133
94DK-0000140
                                                                                                                                                                                                                                                                     94WO-DK00370
                                                                                                                                                                      Bisgardfrantzen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                       entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          6.48;
                                                                                                                                                                                    ×
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              50;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       515
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       --NKIMSIYHKYAETF----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 110.5;
Pred. No. 0.
                                                                        English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Mismatches
                                                                                                                                                                      Ή,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ₽
                                                                                                                                                                        Borchert
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DKRSIIGKSYETRPWDLTGQFI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DB -
1.027·
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                120;
                                                                                                                                                                        H
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       16;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               -----FRLDAVKH
                                                                                                                                                                                                                                                                                                                                                                                                      dishwashing;
 and dyeing.
ine stability;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                113;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        514;
                                                                                                          acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       -PWGGKLTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   504
                          be
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   457
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         283
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 397
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               345
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               291
```

```
RESULT 7
AAW31406
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δ.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DЬ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SSSSS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local S
Matches 68
                                                                                                                                         08-NOV-1996;
30-APR-1996;
28-JUN-1996;
11-JUL-1996;
  Termamyl-like alpha-amylase variants with improved properties - e. increased stability at low pH and low calcium, useful as detergent additives and in industrial starch processing e.g. liquefaction
                                                        N-PSDB;
                                                                                         Bisgard-Frantzen H,
                                                                                                                                                                                                     30-APR-1997;
                                                                                                                                                                                                                            06-NOV-1997.
                                                                                                                                                                                                                                                   WO9741213-A1
                                                                                                                                                                                                                                                                         Bacillus stearothermophilus
                                                                                                                                                                                                                                                                                                       Termamyl; alpha-amylase; enzyme engineering; protein engineering; starch; liquefaction; saccharification; sweetener;
                                                                                                                                                                                                                                                                                                                                           Bacillus stearothermophilus Termamyl-like alpha-amylase
                                                                                                                                                                                                                                                                                               textile desizing;
                                                                                                                                                                                                                                                                                                                                                                      11-MAY-1998
                                                                                                                 (NOVO)
                                                                                                                                                                                                                                                                                                                                                                                             AAW31406;
                                                                                                                                                                                                                                                                                                                                                                                                                   AAW31406 standard; Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        agents.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                low temperature optimum; pH optimum; higher hydrolysis velocity and improved tolerance to other composition constituents, e.g. oxidation
                                                      1997-549718/50
DB; AAV02473.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                458
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             398
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           346
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     284
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         292
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   239 IKFSFFPDWLSYVRSQTGKPLFTVGEYWS-----YDINKLHNYITKTDGTMSLFDAPL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       195
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             50
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   68; Conserv
                                                                                                                 NOVO-NORDISK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DTVTINS--DGWGEFKVNGGSVSVWVPRKTTVSTIARPITTRPW--TGEFV 504
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DELGTKTFIDYFPEYQTEDGTVS-----DKRSIIGKSYETRPWDLTGQFI 328
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRANCEA--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             QDKYY------PWGGKLTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NYDYLMYADLDMDHPEVVTELKNWGKWYVNTTNIDG------FRLDAVKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TQHDYLDHSDIIGWTREGGTEKPGSGLAALITDGPGGSKWMYVGKQHAGKVFYDLTGNRS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SYKEFAESALEETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIEN 109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      -----FKPLA-YAFILTRQEGYPCVF--YGDYYGIPQYNIPSLKSKIDPLLIARRDYAYG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     HNKFYTASKSGGAFDMRTLMTNTLMKDQPTLAVTFVDNHDTEPGQALQSWVDPW-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ETMQVF-DFAGFMEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTD-----Y
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               -QHKYLT-----WRAQ---KDPGHGLLKRL------VGEAKAKELLRDFLFNGV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  515
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Conservative
                                                                                                                                                                                                                                                                                                                                                                    (first entry)
                                                                                                                                        96DK-0001263.
96DK-0000515.
96DK-0000712.
96DK-0000775.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A
                                                                                                                                                                                                   97WO-DK00197
                                                                                                                                                                                                                                                                                               detergent additive;
                                                                                                                 AS
                                                                                         Borchert TV,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             6.4%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                50; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                    515
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 110.5; DB 16; Pred. No. 0.028;
                                                                                                                                                                                                                                                                                                                                                                                                                   A
                                                                                         Svendsen
                                                                                                                                                                                                                                                                                                SS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  120;
                                                                                         Ą
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 113;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          457
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       397
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      345
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     291
```

```
δÃ
                                                                                                                               밁
                                                                                                                                                                                      Q
                                                                                                                                                                                                                                                       망
                                                                                                                                                                                                                                                                                                              Ş
                                                                                                                                                                                                                                                                                                                                                                                Б
                                                                                                                                                                                                                                                                                                                                                                                                                                    Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    뮹
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     stearothermophilus. The invention relates to novel variants of Termamyl-like alpha-amylases that have alpha-amylase activity and exhibit an alteration in at least one property selected from: substrate specificity; binding or cleavage pattern; thermal stability; pH/activity or pH/stability profile; stability towards oxidation; Ca2+ dependency and specific activity. The variant has one or more mutations from those listed in the specification in relation to Bacillus licheniformis Termamyl (see AAW31404). Also claimed are constructs comprising DNA encoding the variant (see AAV02471-73), and recombinant expression vectors and transformed and containing the DNA who are the DNA who are the property to alpha-amylase containing the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the DNA who are the D
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      cells containing the DNA. The Termanyl-like alpha-amylase variant is useful as a detergent additive and can also be used in industrial starch processing e.g. liquefaction (claimed) or saccharification to produce sweeteners, and in textile desizing
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          This protein comprises the Termamyl-like alpha-amylase of Bacillus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Disclosure; Page 86; 101pp; English.
                                                                                                                               398
                                                                                                                                                                                                                                                                                                                  187
         458
                                                                 284
                                                                                                                                                                                            245
                                                                                                                                                                                                                                                       346
                                                                                                                                                                                                                                                                                                                                                                                292
                                                                                                                                                                                                                                                                                                                                                                                                                                          160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    195
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     50 SYKEFAESALEETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIEN 109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         68;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Similarity
                                                                                                                                                                                                                                                                                                                                                                            HNKFYTASKSGGAFDMRTLMTNTLMKDQPTLAVTFVDNHDTEPGQALQSWVDPW-----
DTVTINS -- DGWGEFKVNGGSVSVWVPRKTTVSTIARPITTRPW--TGEFV 504
                                                                 DELGTKTFIDYFPEYQTEDGTVS----
                                                                                                                        TQHDYLDHSDIIGWTREGGTEKPGSGLAALITDGPGGSKWMYVGKQHAGKVFYDLTGNRS
                                                                                                                                                                                                                                                                                                                                                                                                                                          QDKYY----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ETMQVF-DFAGFMEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTD-----Y
                                                                                                                                                                                   -QHKYLT-----WRAQ---KDPGHGLLKRL-----VGEAKAKELLRDFLFNGV
                                                                                                                                                                                                                                                 ----FKPLA-YAFILTRQEGYPCVF--YGDYYGIPQYNIPSLKSKIDPLLIARRDYAYG
                                                                                                                                                                                                                                                                                                           ESIKEFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRANCEA--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  IKESFFPDWLSYVRSQTGKPLFTVGEYWS-----YDINKLHNYITKTDGTMSLFDAPL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NYDYLMYADLDMDHPEVVTELKNWGKWYVNTTNIDG------FRLDAVKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  515 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   6.48;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         50;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score 110.5; DB Pred. No. 0.028; 0; Mismatches 1
                                                                                                                                                                                                                                                                                                                                                                                                                                          -NKIMSIYHKYAETF-----
                                                             --DKRSIIGKSYETRPWDLTGQFI 328
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DB 18;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      120;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 515;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   113;
                                                                                                                                                                                                                                                                                                                                                                                                                                       -- PWGGKLTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                    186
                                                                                                                        457
                                                                                                                                                                                   283
                                                                                                                                                                                                                                             397
                                                                                                                                                                                                                                                                                                           244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          238
                                                                                                                                                                                                                                                                                                                                                                      345
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  291
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   16;
```

```
RESULT 8
AAY99770
ID AAY9
Bacillus; alpha-amylase; washing; textile desizing; starch liquefaction; saccharification; mutein; mutant; enzyme stability; hybrid.
16-NOV-1998;
                 16-NOV-1999;
                                   25-MAY-2000
                                                    WO200029560-A1
                                                                       Bacillus stearothermophilus
                                                                                                                               Bacillus
                                                                                                                                                04-SEP-2000
                                                                                                                                                                   AAY99770
                                                                                                                                                                                   AAY99770 standard; Protein; 515
                                                                                                                            stearothermophilus
                                                                                                                                              (first entry)
98DK-0001495
                 99WO-DK00628
                                                                                                                             Termamyl-like alpha-amylase
                                                                                                                                                                                    ₿
```

```
RESULT
AAY9754
ID AA
XX
AC AJ
DT 1
XX
XX
XX
KW
KW
                                                                                                                                                                                                                                                                                  . 5
                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                     Š
                                                                                                                                                                                                                                                                                                                                                               Ъ
                                                                                                                                                                                                                                                                                                                                                                                  Š
                                                                                                                                                                                                                  망
                                                                                                                                                                                                                                        δã
                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                 Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                      Ŷ
                                                                                                                                                                                                                                                                                                                                                                                                                                                           Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              The present sequence is a parent alpha-amylase from which mutants with increased stability at acidic pH, low calcium concentration and high temperatures have been derived. A variant may contain mutations in one or more solvent exposed amino acid residues to increase the overall hydrophobicity of the enzyme or the overall number of methyl groups in the side chains of exposed residues may be increased. The mutations can be incorporated by site-directed mutagenesis or by random mutagenesis. As a result of their increased stability, the variants are suitable for the industrial processing of starch, i.e. starch liquefaction and saccharification. They may also be useful for washing, dishwashing and textile desizing. Hybrid alpha-amylases comprising partial amino acid sequences derived from two or more alpha-amylases have also been created in order the increase engineers.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Variant of parent termamyl-like alpha amylase useful for washing, textile desizing and starch liquefaction, comprising alterations or more solvent exposed amino acid residues .
Termamyl-like alpha-amylase; variant; starch liquefaction; fuel; detergent composition; laundry cleaning composition; ethanol production;
                                    B. stearothermophilus termamyl-like alpha amylase
                                                                                     AAY97547;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Claim 8; Fig 1; 80pp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Svendsen A,
                                                              12-FEB-2001
                                                                                                            AAY97547 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Note:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (NOVO ) NOVO-NORDISK AS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       order to increase enzyme stability.
                                                                                                                                                                                                                                                                                                                                        160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2000-387777/33.
                                                                                                                                                                      458
                                                                                                                                                                                           284
                                                                                                                                                                                                                   398
                                                                                                                                                                                                                                                                  346
                                                                                                                                                                                                                                                                                        187
                                                                                                                                                                                                                                                                                                                 292
                                                                                                                                                                                                                                                                                                                                                               239
                                                                                                                                                                                                                                                                                                                                                                                       110
                                                                                                                                                                                                                                                                                                                                                                                                               195
                                                                                                                                                                                                                                                                                                                                                                                                                                  50 SYKEFAESALEETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIEN
                                                                                                                                                                                                                                                                                                                                                                                                                                                             68;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAA48482
                                                                                                                                                                                                                                                                                                                                                                                    ETMQVF-DFAGFMEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTD-----Y
                                                                                                                                                                    DTVTINS -- DGWGEFKVNGGSVSVWVPRKTTVSTIARPITTRPW--TGEFV 504
                                                                                                                                                                                         DELGTKTFIDYFPEYQTEDGTVS-----DKRSIIGKSYETRPWDLTGQFI 328
                                                                                                                                                                                                                TQHDYLDHSDIIGWTREGGTEKPGSGLAALITDGPGGSKWMYVGKQHAGKVFYDLTGNRS
                                                                                                                                                                                                                                                                                      ESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRANCEA--
                                                                                                                                                                                                                                                                                                               HNKFYTASKSGGAFDMRTLMTNTLMKDQPTLAVTFVDNHDTEPGQALQSWVDPW-----
                                                                                                                                                                                                                                                                                                                                                              IKESEFPDWLSYVRSQTGKPLFTVGEYWS-----YDINKLHNYITKTDGTMSLFDAPL
                                                                                                                                                                                                                                                                                                                                                                                                             NYDYLMYADLDMDHPEVVTELKNWGKWYVNTTNIDG-----
                                                                                                                                                                                                                                                                ----FKPLA-YAFILTRQEGYPCVF--YGDYYGIPQYNIPSLKSKIDPLLIARRDYAYG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           515
                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Kjaerulff S,
                                                            (first
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Æ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                in AAY99604 are the same.
                                                                                                            Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       6.4%;
                                                            entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         English.
                                                                                                                                                                                                                                         -WRAQ---KDPGHGLLKRL-------VGEAKAKELLRDFLFNGV
                                                                                                                                                                                                                                                                                                                                      ----NKIMSIYHKYAETF------
                                                                                                                                                                                                                                                                                                                                                                                                                                                           50;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Bisgard-Frantzen H,
                                                                                                            515
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 110.5; DB 21; Pred. No. 0.028;
                                                                                                                                                                                                                                                                                                                                                                                                                                                           Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                           120;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Andersen
                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
                                                                                                                                                                                                                                                                                                                                                                                                            ----FRLDAVKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 515
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 C
                                                                                                                                                                                                                                                                                                                                                                                                                                                          113;
                                                                                                                                                                                                                                                                                                                                      PWGGKLTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   created
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            in
                                                                                                                                                                                                                   457
                                                                                                                                                                                                                                                                                                                                      186
                                                                                                                                                                                                                                                                                                                                                                                                            238
                                                                                                                                                                                                                                                                                                                                                                                                                                    109
                                                                                                                                                                                                                                         283
                                                                                                                                                                                                                                                                                                                345
                                                                                                                                                                                                                                                                                                                                                                                    159
                                                                                                                                                                                                                                                                 397
                                                                                                                                                                                                                                                                                       244
                                                                                                                                                                                                                                                                                                                                                              291
                                                                               Q
                                                                                                                             δõ
                                                                                                                                                       В
                                                                                                                                                                            Š
                                                                                                                                                                                                    Дb
                                                                                                                                                                                                                          Ş
                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                  Q
                                                          밁
                                                                                                         밁
                                                                                                                                                                                                                                                                        δÃ
                                                                                                                                                                                                                                                                                                  Query Match
Best Local S
Matches 68
                                                                                                                                                                                                                                                                                                                                                Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        N-PSDB;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Andersen C,
Kjaerulff S;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    30-MAR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            28-MAR-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   12-OCT-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          WO200060059-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (NOVO ) NOVO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2001-015656/02
DB; AAA37851.
                                                                                                         346
                                                                                                                                                                                                      239
                                                                                                                                 187
                                                                                                                                                                                                                                                                                                            Similarity
            DTVTINS--DGWGEFKVNGGSVSVWVPRKTTVSTIARPITTRPW--TGEFV
                                                                                                                                                                               QDKYY----
                                                                                                                                                                                                                                                                                                                                                  515
                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NORDISK AS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Jorgensen
                                                                                                                                                                                                                                                                                                                                                  AA;
```

```
WIJ, G48, T49, S50, Q51, A52, D53, V54, G57, G107, G108, A111, S168 and M197. The alterations in (I) are independently an insertion of an amino acid downstream of the amino acid which occupies the position or deletion or substitution of the amino acid which occupies the position with a different amino acid. The variant has alpha-amylase activity. (I) or compositions containing it are useful in starch liquefaction, in detergent composition such as laundry, dish washing and hard surface cleaning compositions, ethanol production such as fuel, drinking and industrial ethanol production, desizing of textiles, fabrics or garments. (I) exhibits a reduced capability of cleaving a substrate close to the branching point, and further exhibits improved substrate specificity and/or improved specific activity relative to the parent alpha-amylase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        This sequence represents a termamyl-like alpha amylase. The invention relates to a variant (I) of parent Termamyl-like alpha-amylase comprising alteration at one or more of the positions wi3, G48, T49, S50, Q51, A52, D53, V54, G57, G107, G108, A111, S168 and M13. The alterations in (I) are independently an insertion of an amino M197. The alterations in (I) are independently an insertion of an amino
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               New variants of parent Termamyl-like alpha-amylase, useful in starch liquefaction, in detergent compositions and in ethanol production, exhibit altered cleavage pattern relative to the parent
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                dish washing cleaning composition; hard surface cleaning composition; industrial ethanol production; textile desizing.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Claim 17; Page 69-70; 78pp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Bacillus stearothermophilus
DELGTKTFIDYFPEYQTEDGTVS-----DKRSIIGKSYETRPWDLTGQFI 328
                                                                                                                                               -QHKYLT-----WRAQ---KDPGHGLLKRL-----VGEAKAKELLRDFLFNGV
                                                                                                                                                                                                                         ----FKPLA-YAFILTRQEGYPCVF--YGDYYGIPQYNIPSLKSKIDPLLIARRDYAYG
                                                                                                                                                                                                                                                                                                   ESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLENTIQVREEMEPSHVRANCEA--
                                                                                                                                                                                                                                                                                                                                                                             HNKFYTASKSGGAFDMRTLMTNTLMKDQPTLAVTFVDNHDTEPGQALQSWVDPW-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             IKFSFFPDWLSYVRSQTGKPLFTVGEYWS-----YDINKLHNYITKTDGTMSLFDAPL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ETMQVF-DFAGFMEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTD-----Y
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NYDYLMYADLDMDHPEVVTELKNWGKWYVNTTNIDG---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SYKEFAESALEETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIEN
                                                                         TQHDYLDHSDIIGWTREGGTEKPGSGLAALITDGPGGSKWMYVGKQHAGKVFYDLTGNRS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2000WO-DK00148
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      99DK-0000437
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        6.4%; Score 110.5; DB
19.4%; Pred. No. 0.028;
tive 50; Mismatches 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CI,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Bisgard-Frantzen
                                                                                                                                                                                                                                                                                                                                                                                                                                               NKIMSIYHKYAETF----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            120;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ħ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  22;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     -----FRLDAVKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Svendsen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                113;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      515;
                                                                                                                                                                                                                                                                                                                                                                                                                                               PWGGKLTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      109
                                                                                                                                                                                                                                                                                                                                                                                                                                               186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             291
                                                                             457
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            238
                                                                                                                                               283
                                                                                                                                                                                                                                                                                                   244
                                                                                                                                                                                                                                                                                                                                                                             345
```

16;

```
RESULT 10
ABB76588
ID ABB766
XX ABB766
XX DB76
XX IP-AU
XX IP-AU
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
XX IP-TMA
X
                                                     Qy
                                                                                                                                               Qy
                                                                                                                                                                                                       Ъ
                                                                                                                                                                                                                                                        Ş
                                                                                                                                                                                                                                                                                                           Ъ
                                                                                                                                                                                                                                                                                                                                                  Q
          밁
                                                                                                         Дb
                                                                                                                                                                                                                                                                                                                                                                                                          В
                                                                                                                                                                                                                                                                                                                                                                                                                                                      Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                This invention relates to variants of a parent Termamyl-like alpha-amylases. These are used for starch liquefaction, ethanol production, detergent, and textile desizing. The amylases have altered stability, particularly at high temperatures from 70-120plusoc and low pH in the range from pH 4.0-6.0. The present sequence is a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             01-AUG-2000;
12-SEP-2000;
10-NOV-2000;
26-APR-2001;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Variant of parent Termamyl-like alpha amylase, compositions, for starch liquefaction, ethanol and/or dish washing, and textile desizing -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Claim 4; Fig 5; 90pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Thisted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   cermamy1-like-alpha-amylase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (NOVO ) NOVOZYMES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      12-JUL-2001; 2001WO-DK00488
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      07-FEB-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     WO200210355-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Bacillus stearothermophilus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   textile
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Termamyl;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Termamyl-like-alpha-amylase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            19-AUG-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ABB76588;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ABB76588 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Local
          398
                                                          245
                                                                                                           346
                                                                                                                                                                                                               292
                                                                                                                                                                                                                                                                                                              239
                                                                                                                                                         187
                                                                                                                                                                                                                                                                                                                                                                                                          195
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2002-280633/32.
                                                                                                                                                                                                                                                                                                                                                                                                                                                        50
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ŧ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ABL96209
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 desizing;
TQHDYLDHSDIIGWTREGGTEKPGSGLAALITDGPGGSKWMYVGKQHAGKVFYDLTGNRS
                                                                                                                                                                                                                                                                                                                                                                                                                                 SYKEFAESALEETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIEN 109
                                                   -QHKYLT-----WRAQ---KDPGHGLLKRL------VGEAKAKELLRDFLFNGV
                                                                                              -----FKPLA-YAFILTRQEGYPCVF--YGDYYGIPQYNIPSLKSKIDPLLIARRDYAYG
                                                                                                                                                  ESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRANCEA--
                                                                                                                                                                                                     HNKFYTASKSGGAFDMRTLMTNTLMKDQPTLAVTFVDNHDTEPGQALQSWVDPW-----
                                                                                                                                                                                                                                                                                                                                                  ETMQVE-DFAGFMEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTD------Y
                                                                                                                                                                                                                                                                                                                                                                                                  NYDYLMYADLDMDHPEVVTELKNWGKWYVNTTNIDG------FRLDAVKH
                                                                                                                                                                                                                                                                                                    IKFSFFPDWLSYVRSQTGKPLFTVGEYWS-----YDINKLHNYITKTDGTMSLFDAPL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            alpha amylase; starch liquefaction;
esizing; detergent; enzyme.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     515
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ; 2000DK-0001160.
; 2000DK-0001354.
; 2000DK-0001687.
; 2001DK-0000655.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Kjaerulff
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ã,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           6.48;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Andersen
                                                                                                                                                                                                                                                     50;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score 110.5; DB 23;
Pred. No. 0.028;
50; Mismatches 120;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           515
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           #3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ú
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Fuglsang
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DB 23;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ethanol
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            production,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      useful in detergent
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     production;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  515;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    113;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            washing
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                  238
                                                                                                                                                                                                     345
                                                                                                                                                                                                                                                                                                                                                    159
                                                                                                                                                  244
```

```
밁
                                             ρy
                                                                                                                                                                                                                         TO A WAR WAS SOLUTION OF THE FEW STANDS OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE SOLUTION OF THE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RESULT 11
ABB06935
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Qy
                                                                                                            Best Loc
Matches
                                                                                                                                                                   Query Match
                                                                                                                                                                                                                                                                                           The present invention describes a variant of a parent termamyl-like alpha-amylase (EC 3.2.1.1) (I) comprising an alteration at one or more positions of a group of 31 possible amino acid positions. The alteration in (I) may be at Arg28, Arg118, Asn174, Arg181, Gly182, Asp183, Gly184, Arg310, Asn344, Arg320, His324, Glu345, Tyr396, Arg400, Trp439, Arg444, Asn445, Lys446, Gln449, Arg458, Asn471, or Asn464. (I) can be used for washing and/or dishwashing, textile desizing, and starch liquefaction. (I) is useful as a component in hard surface cleaning detergent composition, and for producing sweeteners and ethanol from starch. (I) has altered solubility, preferably increased solubility, in particular under washing, dish washing or hard surface cleaning termamyl-like alpha-amylase which is used in the exemplification of the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          08-MAR-2000;
15-MAR-2000;
23-FEB-2001;
26-FEB-2001;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Bacillus;
variant; п
                                                                                                                                                                                                                         Sequence
                                                                                                                                                                                                                                                                                present invention
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Novel variant of parent termamyl-like alpha-amylase useful as component in washing and dishwashing compositions, for textile desizing, for starch liquefaction, and for producing sweetenes ethanol from starch
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Claim 8; Page 138-139; 153pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 07-MAR-2001;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Bacillus stearothermophilus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               washing;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         B. stearothermophilus termamyl-like alpha-amylase protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ABB06935;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ABB06935 standard; Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  N-PSDB;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Andersen C,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (NOVO ) NOVOZYMES AS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    13-SEP-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           WO200166712-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  19-JUN-2002
                                                                                                                                      Local
  195
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2002-239612/29.
DB; ABL50566.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      458
                                                         50
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       284
                                                                                                            1 Similarity
68; Conserv
  NYDYLMYADLDMDHPEVVTELKNWGKWYVNTTNIDG---
                                                SYKEFAESALEETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIEN 109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  sweetener;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ; termamy1-like alpha-amylase; alpha-amylase; EC 3.2.1.1;
mutant; enzyme; protein co-ordinate data; cleaning; detergent;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DELGTKTFIDYFPEYQTEDGTVS-----DKRSIIGKSYETRPWDLTGOFI 328
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DTVTINS - - DGWGEFKVNGGSVSVWVPRKTTVSTIARPITTRPW-
                                                                                                                                                                                                                         515
                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Borchert
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2001DK-0000303
2001US-271382P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2000DK-0000376.
2000US-189857P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2001WO-DK00144
                                                                                                                                                                                                                         A
                                                                                                                                6.48;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ethanol;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TV,
                                                                                                          50;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Nielsen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               515
                                                                                                          Score 110.5; DB 23;
Pred. No. 0.028;
0; Mismatches 120;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  starch.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                BR
                                                                                                            Indels
                                                                                                                                                                Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   sweeteners
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  textile
---FRLDAVKH
                                                                                                                                                                   515;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ø
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ħ
                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NO:6.
                                                                                                          16;
```

ETMQVF-DFAGFMEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTD--

--Y 159

밁 Ş 밁

δ

밁

Ş 밁 Š

밁

```
The sequences given in AAB47850-56 show modified alpha-amylases derived from the genus Bacillus. These alpha amylases are Termamyllike alpha-amylase and they have been pre-oxidized. The alpha amylase is useful for producing a maltodextrin or glucose syrup, by treating starch with a pre-oxidized alpha-amylase until a product with a DE between 5-45 has been provided and/or until a product with a molecular weight of between 5-30 kda has been provided. The product comprises a maltodextrin with a DE of: 8.5 and/or a maltodextrin with a molecular weight of 14-16 kda. The alpha amylase is useful for producing a maltodextrin or glucose syrup, where the glucose syrup is useful as an ingredient in food, feed or pharmaceuticals. Glucose syrup is useful in confectionery such as candies, beverages such as isotonic drinks, bakery such as cereal bars, dairy and ice cream such as coffee
                                                                                                                                                                            Claim 5; Page 32-33; 47pp; English
                                                                                                                                                                                                              New modified alpha-amylase derived Termamyl-like alpha-amylase, which
                                                                                                                                                                                                                                                                                                                                                                                                                                        Bacillus stearothermophilus
                                                                                                                                                                                                                                                                                                                                                                                                                                                              salad dressing; cured
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Alpha amylase; Bacillus; Termamyl-like; maltodextrin; starch; food; feed; pharmaceutical; confectionery; car isotonic drink; bakery; cereal bar; ice cream; coffee
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAB47852 standard;
                                                                                                                                                                                                  maltodextrin or glucose syrup
                                                                                                                                                                                                                                                                                     Nielsen
                                                                                                                                                                                                                                                                                                                                 14-JUN-2000;
20-JUN-2000;
                                                                                                                                                                                                                                                                                                                                                                    13-JUN-2001;
                                                                                                                                                                                                                                                                                                                                                                                                                    WO200196537-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAB47852;
                                                                                                                                                                                                                                                                                                                                                                                            20-DEC-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Bacillus alpha amylase BSG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                02-APR-2002
                                                                                                                                                                                                                                                                                                           (NOVO ) NOVOZYMES AS
                                                                                                                                                                                                                                                  2002-098064/13.
)B; AAI72213.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        458
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 346
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             284
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    398
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              292
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             239
                                                                                                                                                                                                                                                                                     BR,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DTVTINS--DGWGEFKVNGGSVSVWVPRKTTVSTIARPITTRPW--TGEEV 504
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DELGTKTFIDYFPEYQTEDGTVS-----DKRSIIGKSYETRPWDLTGQFI 328
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRANCEA--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            HNKFYTASKSGGAFDMRTLMTNTLMKDQPTLAVTFVDNHDTEPGQALQSWVDPW-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     QDKYY----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TQHDYLDHSDIIGWTREGGTEKPGSGLAALITDGPGGSKWMYVGKQHAGKVFYDLTGNRS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             IKFSFFPDWLSYVRSQTGKPLFTVGEYWS----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         -QHKYLT-----WRAQ---KDPGHGLLKRL----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ----FKPLA-YAFILTRQEGYPCVF--YGDYYGIPQYNIPSLKSKIDPLLIARRDYAYG
   conventional foods such as
                                                                                                                                                                                                                                                                                   Weibye
                                                                                                                                                                                                                                                                                                                                 2000DK-0000917.
2000US-212852P.
                                                                                                                                                                                                                                                                                                                                                                   2001WO-DK00404
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                meat;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               515
                                                                                                                                                                                                                                                                                                                                                                                                                                                                fermented meat;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     -NKIMSIYHKYAETF----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             B
                                                                                                                                                                                                                has
                                                                                                                                                                                                                          from the
                                                                                                                                                                                                               been
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ----YDINKLHNYITKTDGTMSLFDAPL
                                                                                                                                                                                                             genus Bacillus and/or is pre-oxidized for produci
                                                                                                                                                                                                                                                                                                                                                                                                                                                                spice.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         - VGEAKAKELLRDFLFNGV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       cand
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 glucose syrup;
                                                                                                                                                                                                           for producing
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PWGGKLTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 457
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                397
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            345
                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT 13
AAU12151
 ρ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ρ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SSSS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local
The invention relates to a variant of parent TERMAMYL-like alpha-
                       Claim
                                                                                                                                                                                                                                                                                                                                                                                                     AAU12151;
                                                                                                      N-PSDB;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           284
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   398
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         195
                       5
```

```
New variant of parent Termamyl-like alpha-amylase for use as a component in washing and dishwashing compositions, for textile desizing, for starch liquefaction, and for producing sweeteners ethanols from starch -
                                                                                                                                                                                                          Svendsen A,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TERMAMYL; alpha-amylase; detergent; dishwashing; textile desizing; starch liquefaction; ethanol production; hard surface cleaner;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ingredients and preparations such as cured meat, fermented meat, and seasoning encapsulated flavours.
                                                                                                                                                                                                                                                   (NOVO ) NOVOZYMES
                                                                                                                                                                                                                                                                                                                                     10-MAY-2001;
                                                                                                                                                                                                                                                                                                                                                                              22-NOV-2001
                                                                                                                                                                                                                                                                                                                                                                                                                     WO200188107-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                           Bacillus stearothermophilus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    sweetener;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Bacillus TERMAMYL-like alpha-amylase BSG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 09-APR-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAU12151 standard;
                                                                                                                                                                                                                                                                                            12-MAY-2000; 2000DK-0000779
                                                                                                                                              2002-106123/14.
DB; AAS20024.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           50 SYKEFAESALEETRKRIVLEPSHLOEKYSSMTGLDGKTELOMLAFKSSKIRLLRSMAIEN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       68;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Similarity
Fig 1; 84pp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DELGTKTFIDYFPEYQTEDGTVS-----DKRSIIGKSYETRPWDLTGQFI 328
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DTVTINS--DGWGEFKVNGGSVSVWVPRKTTVSTIARPITTRPW--TGEFV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TQHDYLDHSDIIGWTREGGTEKPGSGLAALITDGPGGSKWMYVGKQHAGKVFYDLTGNRS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             -QHKYLT-----WRAQ---KDPGHGLLKRL----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ----FKPLA-YAFILTRQEGYPCVF--YGDYYGIPQYNIPSLKSKIDPLLIARRDYAYG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRANCEA--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   HNKFYTASKSGGAFDMRTLMTNTLMKDQPTLAVTFVDNHDTEPGQALQSWVDPW-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     IKFSFFPDWLSYVRSQTGKPLFTVGEYWS-----YDINKLHNYITKTDGTMSLFDAPL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ETMQVF-DFAGEMEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTD-----Y
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NYDYLMYADLDMDHPEVVTELKNWGKWYVNTTNIDG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  amylopectin;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      515 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Conservative
                                                                                                                                                                                                          Jorgensen
                                                                                                                                                                                                                                                                                                                                     2001WO-DK00323
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        6.4%;
English.
                                                                                                                                                                                                          ÇŢ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  limit
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    50;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ---NKIMSIYHKYAETF-----
                                                                                                                                                                                                            Nielsen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 515
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 110.5;
Pred. No. 0.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  dextrin; NOVAMYL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          .028;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DВ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    120;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           23;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    BSG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             -VGEAKAKELLRDFLFNGV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length
                                                              sweeteners
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    113;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     -FRLDAVKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PWGGKLTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                spices
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      457
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      397
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     291
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   345
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       16;
```

```
RESULT 14
AAW39744
ID
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX
AC
XX

                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ъ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               sequence of 483 amino acids, given in specification. The variant alpha-amylase, a detergent additive comprising the variant or a detergent composition comprising the variant, is useful for washing and/or dishwashing or textile desizing. The alpha-amylase is useful for starch liquefaction or ethanol production and as a component in a hard surface cleaning detergent composition, and for producing sweeteners from starch. The variant has altered alpha-1, 6-D-glucosidic branch linkage cleavage activity on amylopectin, preferably increased alpha-1, 6-D-glucosidic branch linkage cleavage activity of amylopectin or a limit dextrin prepared by TERMAMYL (RTM) or NOVAMYL (RTM). The present sequence is a natural variant of the TERMAMYL alpha-amylase,
                                                                                   14-MAY-1996;
                                                                                                                                                                                                                                                                                                                                                                             Alpha-amylase; calcium binding; baking aid; textile industry.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     and each position corresponds to a position of a parent Termamyl-like alpha-amylase sequence having a Bacillus licheniformis alpha-amylase sequence of 483 amino acids, given in specification. The variant alpha-
                                                                                                                                        06-MAY-1997;
                                                                                                                                                                                                   20-NOV-1997.
                                                                                                                                                                                                                                                             WO9743424-A1
                                                                                                                                                                                                                                                                                                                     Bacillus stearothermophilus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    B. stearothermophilus alpha amylase partial protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 20-MAY-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAW39744;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAW39744 standard; Protein;
                        (GEMV ) GENENCOR INT INC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     amylase comprising an alteration at regions 186-193, 261-276, 334-339, or at position 234, where the variant has alpha-amyla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         458
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   284
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              398
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              346
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                292
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  195
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             50
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DTVTINS--DGWGEFKVNGGSVSVWVPRKTTVSTIARPITTRPW--TGEFV 504
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DELGTKTFIDYFPEYQTEDGTVS-----DKRSIIGKSYETRPWDLTGQFI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       HNKFYTASKSGGAFDMRTLMTNTLMKDQPTLAVTFVDNHDTEPGQALQSWVDPW-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        QDKYY---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ETMQVF-DFAGFMEPEYDTPIFCANFFTSTNVNIVVLDLNPLHQLTDQTD-----Y
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NYDYLMYADLDMDHPEVVTELKNWGKWYVNTTNIDG----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SYKEFAESALEETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIEN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TQHDYLDHSDIIGWTREGGTEKPGSGLAALITDGPGGSKWMYVGKQHAGKVFYDLTGNRS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRANCEA--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             IKFSFFPDWLSYVRSQTGKPLFTVGEYWS----YDINKLHNYITKTDGTMSLFDAPL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                -QHKYLT-----WRAQ---KDPGHGLLKRL------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ----FKPLA-YAFILTRQEGYPCVF--YGDYYGIPQYNIPSLKSKIDPLLIARRDYAYG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          515
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A
                                                                                96US-0645971
                                                                                                                                        97WO-US07609
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           position 234, where the variant has alpha-amylase activity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          19.48;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  50;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       548
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score 110.5; DB 23;
Pred. No. 0.028;
0; Mismatches 120;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        -NKIMSIYHKYAETF----
                                                                                                                                                                                                                                                                                                                                                                                                            starch
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       B
                                                                                                                                                                                                                                                                                                                                                                                                            liquefaction;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DB 23;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                -VGEAKAKELLRDFLFNGV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 515;
                                                                                                                                                                                                                                                                                                                                                                                                         detergent;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ----FRLDAVKH 238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  113;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  --PWGGKLTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             283-293 or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       397
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       345
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             291
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  16
```

```
AAYO1585
ID AAYO1585
ID AAYO1587
AC AAYO1
XX 17-JU
XX 17-JU
XX Alpha
KW Alcoh
KW alcoh
KW alcoh
KW starc
XX Starc
XX W990
XX W990
XX W990
XX W990
                                                                                                                                                                                                                                                                                                                                                                                                                                            Š
                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                             δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SXCCCCCCCCX PX PPTX DXX
                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Matches
                                                                                               alcohol production;
starch desizing.
                                WO9909183-A1
                                                                Bacillus stearothermophilus
                                                                                                                               Alpha-amylase; mutant; liquefaction;
                                                                                                                                                            An alpha-amylase (Am-Stearo) protein
                                                                                                                                                                                               17-JUN-1999
                                                                                                                                                                                                                                                              AAY01585 standard; Protein; 548
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 site and thereby alter performance. This modified enzyme can be used for e.g. starch liquefaction, in laundry or dishwashing detergent compositions, as baking aids or in textile desizing. The alpha-amylase variants can have increased activity at low pH and high temperatures, increased high pH and oxidative stability and improved stability in the absence or low concentrations of calcium ion.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                This partial sequence represents an alpha-amylase isolated from Bacillus stearothermophilus. This sequence is used in the analysis of novel alpha-amylases comprising of an A domain, a C domain and a calcium binding site associated with the A domain and the C domain. Ligand residues in the A and/or C domains allow the modification of the alpha-amylase which alter the characteristics of the calcium binding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              New modified alpha-amylase enzymes properties to alter e.g. high or low
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Disclosure; Fig 5A; 31pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    oxidative stability
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 WPI; 1998-008893/01.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RR,
                                                                                                                                                                                                                                                                                                                                                489
                                                                                                                                                                                                                                                                                                                                                                              282
                                                                                                                                                                                                                                                                                                                                                                                                                429
                                                                                                                                                                                                                                                                                                                                                                                                                                             245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               379
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            327
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           273
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          229
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          50
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         68;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Similarity
                                                                                                                                                                                                                                                                                                                                                                              GVDELGTKTFIDYFPEYQTEDGTVS-----DKRSIIGKSYETRPWDLTGQFI 328
                                                                                                                                                                                                                                                                                                                                              RSDTVTINS--DGWGEFKVNGGSVSVWVPRKTTVSTIARPITTRPW--TGEFV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NYDYLMYADLDMDHPEVVTELKNWGKWYVNTTNIDG---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SYKEFAESALEETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIEN 109
                                                                                                                                                                                                                                                                                                                                                                                                             YGTQHDYLDHSDIIGWTREGYTEKPGSGLAALITDGAGRSKWMYVGKQHAGKVFYDLTGN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TGESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRANCEA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ----NKFYTASKSGGAFDMRTLMTNTLMKDQPTLAVTFVDNHDTNPAKRCSHGRPW----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         IKFSFFPDWLSYVRSQTGKPLFTVGEYWSYDINKLHNYITKTNGTMSLFDA-PLH----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ETMOVF-DFAGFMEPEYDTPIFCA-----NFFTSTNVNIVVLDLNPLHQLTDQ 156
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             -----FKPLA-YAFILTRQEGYPCVF--YGDYYGIPQYNIPSLKSKIDPLLIARRDYA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Shaw
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        548 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                             -QHKYLT-----WRAQ---KDPGHGLLKRL-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                              (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      6.1%;
                                                                                                              cleaning
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     50;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 105; DB Pred. No. 0.11;
                                                                                                              agent;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ----NKIMSIYHKYAETF----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Mismatches
                                                                                                                                                                                                                                                                B
                                                                                                            detergent
                                                                                                                               starch processing;
                                                                                                                                                             sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  having altered calcium binding pH activity, thermostability or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DB 19;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       117;
                                                                                                                matrix;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Indels 118;
                                                                                                                                                                                                                                                                                                                                                                                                                                             -VGEAKAKELLRDFLFN 281
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ----PWGGKL 184
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          --FRLDGLKH
                                                                                                                                                                                                                                                                                                                                                537
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             428
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           378
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         326
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          272
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       17;
```

```
B
                                   δÃ
                                                                          В
                                                                                                          δÃ
                                                                                                                                                 밁
                                                                                                                                                                                     S
                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                         Ş
                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                      δÃ
                                                                                                                                                                                                                                                                                                                                                                             뮹
                                                                                                                                                                                                                                                                                                                                                                                                               Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match 6.1%; Score 105; DB 20; Length 548; Best Local Similarity 19.3%; Pred. No. 0.11; Matches 68; Conservative 50; Mismatches 117; Indels 118;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               The present sequence represents an alpha-amylase from Bacillus stearothermophilus. The specification describes a mutant alpha-amylase derived from a precursor alpha-amylase by the deletion, substitution, or addition of a residue corresponding to A210, H405, and/or T412 in B. licheniformis alpha-amylase. The mutant alpha-amylase is used in the initial stages (liquefaction) of starch processing, in alcohol production, as a cleaning agent in detergent matrices, and in the textile industry for starch desizing. The enzyme can be used in a detergent for cleaning soiled laundry and/or dishes, and to liquefy starch.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Disclosure; Fig 3; 35pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 New mutant Bacillus licheniformis \hat{\ }a-amylase - useful in starch liquefaction processes and detergents
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              WPI; 1999-190168/16.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Day A,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (GEMV ) GENENCOR INT INC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          19-AUG-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               14-AUG-1998;
                                                                                                                                                   379
                                                                            429
                                                                                                                                                                                      185
                                                                                                                                                                                                                              327
                                                                                                                                                                                                                                                                                                                                                                          229 NYDYLMYADLDMDHPEVVTELKNWGKWYVNTTNIDG-----FRLDGLKH 272
 489
                                       282
                                                                                                                                                                                                                                                                 157 TDYQDKYY-----
                                                                                                                                                                                                                                                                                                   273 IKFSFFPDWLSYVRSQTGKPLFTVGEYWSYDINKLHNYITKTNGTMSLFDA·PLH-----
                                                                                                                                                                                                                                                                                                                                      110 ETMOVF-DFAGFMEPEYDTPIFCA------NFFTSTNVNIVVLDLNPLHQLTDQ 156
                                                                                                                                                                                                                                                                                                                                                                                                               50 SYKEFAESALEETRKRIVLEPSHLQEKYSSMTGLDGKTELQMLAFKSSKIRLLRSMAIEN 109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Swanson B;
                                                                                                                                                                                                                          ----NKFYTASKSGGAFDMRTLMTNTLMKDQPTLAVTFVDNHDTNPAKRCSHGRPW----
RSDTVTINS--DGWGEFKVNGGSVSVWVPRKTTVSTIARPITTRPW--TGEFV 537
                                 GVDELGTKTFIDYFPEYQTEDGTVS-----DKRSIIGKSYETRPWDLTGQFI 328
                                                                        YGTQHDYLDHSDIIGWTREGVTEKPGSGLAALITDGAGRSKWMYVGKQHAGKVFYDLTGN
                                                                                                          ---QHKYLT-----WRAQ---KDPGHGLLKRL------VGEAKAKELLRDFLFN 281
                                                                                                                                                                                     TGESIKFFSPLVMWTRFSSSKEKHKALFSAFLEYYQAWLEMTIQVREEMEPSHVRANCEA 244
                                                                                                                                               -----FKPLA-YAFILTRQEGYPCVF--YGDYYGIPQYNIPSLKSKIDPLLIARRDYA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 548 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          97US-0914679
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               98WO-US16906
                                                                                                                                                                                                                                                             ------PWGGKL 184
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                               428
                                                                                                                                                                                                                          378
                                                                                                                                                                                                                                                                                                   326
```

Search completed: June 24, 2003, 18:36:32 Job time: 46 secs

				్రే - 190 చే <sup>ట్</sup> - 44	, 14 <del>99</del>	्राच्या विकास क्षेत्र विकास का क्षेत्र विकास का क्षेत्र विकास का क्षेत्र विकास का क्षेत्र विकास का क्षेत्र विका विकास का क्षेत्र विकास क		
No. of Lot		Y			·*			
, al		, 1°			-1			
į.	\$	¥.,,		±		V.		
u.		7						
	# 1 2		* * *		in the second se			
	**************************************			##				
		() () () () () () () () () () () () () (				Y		
5				N-	\$	· · · · · · · · · · · · · · · · · · ·		
Ki <sub>t</sub>		W						
				* * * * * * * * * * * * * * * * * * *			- 2 - ×	
¥ .	· · · · · · · · · · · · · · · · · · · ·		*.		*	:		Same C. M.
ir S	dig.		*				10 E	
<b>3</b>	. <u>\</u>		x - 1					1
3								3.
								Š.
				**************************************	**	*	XXX m	
						en <sub>y</sub>		
	View of the control o			<i>e</i> *			4. 4	
-				x - X				
<b>%</b>				. 4.			ŭ.	
			<i>F</i>		•			
	4							· \$441
	i i i	- N	i vin p		nes .			